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July

American Standard Safety Codes
Help Prevent Industrial Accidents

(See pages 131 and 199)

1937

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JULY 1937

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Proposed Code Shows How To Record Accident Causes

by

H. W. Heinrich[1]

Chairman, Subcommittee on Accident Cause Code, Sectional Committee on Standardization of Methods of Recording and Compiling Accident Statistics

Essential information for preventing accidents, heretofore not shown, provided for in new code; separate accident facts to be recorded separately, making comparison of records possible.

WE LIVE and work, today, in an era of rapid change, progress, and development. Old ideas are being scrapped. New ideas take their place. Some are good and some are frankly experimental. There is no denying the fact, however, that mass public interest is keenly concerned with worthwhile, disturbing, and gravely important national conditions.

Less spectacular, perhaps, than social and economic welfare, labor disturbances, international security, and traffic safety, but fully as serious in many respects, is the problem of accident prevention in our industries. This question, too, merits, and is receiving, more and more consideration.

Industry today realizes many things concerning industrial accident occurrence that were not full appreciated a few years ago.

Accidents Are Caused

It is known today that accidents do not merely happen, but that they are definitely *caused*. Independent and impartial research has shown that production and safety are interdependent. It is known, too, that the causes of accidents are tangible and specific—that they may be determined by investigation. It is also now a proved fact that these causes may be removed by practical methods that are within the power of business executives and supervisors to apply, and that the cost of this work is more than offset by the monetary savings which invariably follow.

Machines and mechanical equipment, today, are more safely designed and better guarded. Processes are safer. Industries are better lighted and ventilated, cleaner and more orderly. Employees are instructed in safe practices and accident prevention in general is better organized.

Causes Are Not Now Recorded

In every respect, save one, as a matter of fact, progress in the commendable work of preventing industrial accidents, has been marked. The exception referred to, is that accident causes are not recorded.

The memory of individuals is limited. Dependence, therefore, must be placed on recorded data, especially when conclusions are to be drawn from a mass of information of nation-wide derivation. Federal, state, and municipal bodies, organizations, and individuals now record many interesting details of industrial-accident occurrence. Classifications are set up by kind of industry, cost, degree of severity, age, sex, color, occupation, and many other divisions—but nowhere can be found in use any code or statistical instrument which provides for recording the *causes* or even the *facts*

[1]Assistant Superintendent, Travelers Insurance Company, Hartford, Conn.

OUR FRONT COVER

Six hundred physicians in New York State alone are engaged in industrial medicine. Industrial first-aid stations and facilities for certain types of hospitalization have been increasing steadily within the last few years throughout the country.—*Dr. C. H. Watson, American Telephone and Telegraph Company; president, National Safety Council.*

of accident occurrence, essential to accident prevention.

Development of Accident Cause Code

Because of the lack of valuable data and also because of the growing demand for such data, the Sectional Committee of the American Standards Association on Standardization of Methods of Recording and Compiling Accident Statistics, appointed a subcommittee in 1927, to prepare a revised accident cause code.

Inasmuch as the work of this subcommittee has been completed, and in view of the interest now being displayed in the recording of accident cause data, it may now be *apropos* to discuss briefly the principles involved, and also to comment on interpretation and application.

Highlights of Proposed Code

The proposed code differs from others chiefly in that:

(*a*) Mutually exclusive headings are provided.
(*b*) Headings are defined.
(*c*) Six factors, commonly admitted to be of major interest in accident prevention, are included for the first time in any code.
(*d*) Provision is made for separately recording the unsafe practices of persons, for the first time in any code.
(*e*) Provision is made for recording the reasons why persons act unsafely, for the first time in any code.
(*f*) Complete rules for application, extensive enough to cover all contingencies, are provided.

It is axiomatic that *separate* kinds of data must be *coded separately*, if it is granted that the primary purpose of the code is to permit totaling or comparison of the numbers or frequency of any one kind. For some strange reason, however, codes in existence today are not so constructed.

Need For Mutually Exclusive Headings

Although unnecessary it may nevertheless be of interest to provide some detail illustrating the utter necessity for building a code on the basis of "mutually exclusive headings."

Codes in use today make common use of the general heading "Cause". No attempt is made to define this heading. Coders are compelled to use their imagination, which, by the way, cannot fail to vary by individuals and to lead them completely astray.

Under this undefined heading are listed dissimilar things; for example, machines, falls of persons, and handling objects. An accident in which a person handling a lathe chuck falls against a lathe, and is caught between the unguarded and inrunning end gears of the lathe, could be recorded properly under all three items of such a cause heading. Guess work, or individual preference, might result in recording it under any one of the three items. Misleading, inaccurate, and non-valuable information can only result.

The proposed code requires that the *separate facts* of this accident occurrence be recorded *separately*. The lathe would be recorded as the agency and the end gears as the agency part.

These facts would be recorded separately from the kind of accident and the other essential facts developed by investigation and required by the code.

Essential Information Developed by Proposed Code

Statisticians, employers, safety engineers, and others interested in accident prevention are practically unanimous in their agreement that the following information—obtainable if the proposed code is used—is valuable and should be obtained and coded:

1. The agency—meaning the machine, tool, vehicle, animal, dust, gas, liquid, or other object or substance that, chiefly because of its dangerous condition and the importance of the part it plays in causing the injury, best identifies the accident.
2. The agency part—meaning the particular part of the recorded agency of chief interest because of its dangerous condition.
3. The kind of accident—meaning the fall of a person, the fall of an object, caught in or between, struck by, or other event causing and immediately preceding or accompanying the injury.
4. The unsafe act of person—meaning the violation of a commonly accepted safe-practice rule, contributing to or resulting in the accident.
5. The personal cause or reason why a worker acts unsafely—meaning the wilful disregard of instructions or other mental or physical

characteristic permitting or prompting the violation.

6. The proximate mechanical cause—meaning the defect, or absence of guard, etc., causing the accident or contributing directly to it.

Proceeding on the basis that the foregoing items are the commonly desired essential facts of accident occurrence, the subcommittee provided for recording these separately in the proposed code.

The heading "Agency" applies only to such objects or substances as come within the definition of the code term "agency." But one place is provided for recording agencies and nothing but agencies can there be recorded.

Identical procedure and reasoning were applied to the remaining five items.

Coding of Typical Accidents

The accidents shown below are typical "run-of-the-mine" cases and are shown as they would be recorded under the proposed code.

It is to be noted that incomplete data are provided in Case 3, and consequently there are no entries under certain of the code headings. The proposed code is no better and no worse than existing codes with regard to its inability to code data that are not provided. It does, however, permit accurate tabulation of available data. In addition, its use should encourage more complete reporting of accidents because it features the six separate kinds of information now commonly demanded. Incidentally, the subcommittee suggests the use of a revised Report of Accident Investigation arranged to bring out the more valuable data provided for in the proposed code. The code, therefore, not only permits available information to be tabulated accurately, but is an educational medium as well.

Application of the Proposed Code

The proposed code is intended for use by persons or organizations, such as State Industrial Commissions, that have statistical and coding facilities. Small industrial plants, as a rule, do not use codes nor tabulating-card systems for which the proposed code is designed.

Typical Accident Cases Reported According to the Accident Cause Code

Case 1 — **The operator of a traveling crane climbed out of and on top of his cab to cover a hole through which rain was leaking. He had previously exposed himself recklessly. The cab was not provided with means of access to the top. While getting down he slipped and fell 30 feet, striking a steel girder and injuring his head.**

Agency	*Part of Agency*	*Kind of Accident*	*Performance of Person*	*Proximate Personal Cause*	*Proximate Mechanical Cause*
Traveling crane	Cab	Fall—one level to another	Working in unsafe position	Reckless	Poor design

Case 2 — **The engineer of a chemical plant was struck and injured by the unguarded revolving weights on the governor of a steam engine. The accident occurred while the engineer was engaged in oiling the engine. He stated that the usual practice was to oil the engine while it was at rest.**

Agency	*Part of Agency*	*Kind of Accident*	*Performance of Person*	*Proximate Personal Cause*	*Proximate Mechanical Cause*
Steam engine	Governor	Struck by	Oiling machine in motion	Disregard of instructions	Unguarded governor

Case 3 — **A gas flask exploded while being transferred on a motor truck, and gas burned a helper who was about to unload the vehicle.**

Agency	*Part of Agency*	*Kind of Accident*	*Performance of Person*	*Proximate Personal Cause*	*Proximate Mechanical Cause*
Compressed-gas flask	None	Burning	No data	No data	Defective flask

Cause Code May Be Widely Distributed

The proposed code for recording causes of accidents, prepared by a subcommittee of the Sectional Committee on Standardization of Methods of Recording and Compiling Industrial Accident Statistics (Z16), will probably be given wide distribution for comment and criticism.

The sectional committee is now voting on whether or not the code is to be printed and distributed. The vote will probably be completed within the next several weeks.

As soon as the code is available, copies may be obtained from the office of the American Standards Association without charge.

The principles of the proposed code, however, are of practical value to industrial units, large or small, and accidents that occur in any kind or size of plant can be grouped according to the code headings, rules, and definitions.

The small plant, however, would merely *list* the accident data in lieu of punching it on tabulating cards. All that the small plant operator who wishes to cooperate needs to do is to find, by investigation, as many as possible of the six separate facts required by the proposed code, and submit this information, on a suitable accident-report form, to any coding agency (his own or some other) that he may choose to supply with the data.

Procedure in Coding

The procedure in coding is described below. The coder is assumed to have before him a report of accident investigation, preferably one which is specially designed to bring out the facts to be recorded under the six specific headings. It is worthy of mention, incidentally, that trial has already shown that "run-of-the-mine" accident reports today, incomplete as they admittedly are, can be handled by the proposed code to good advantage.

The first task is the selection of an agency. In accordance with the rules, the coder determines what machine, object, or substance best identifies the accident. If he finds that the injured person sustained a fractured leg because of a fall over a loose and up-tilted plank in a floor while carrying a box so that it obscured his vision, he immediately names "wood floor" as the agency. This selection is made because the floor is defective and it caused the accident which in turn resulted in the injury.

The part of the agency is recorded as "none," inasmuch as the agency "wood floor" in the code has no "parts."

In coding "kind of accident" the coder finds at once that "Falls on level" fits the accident description exactly.

The coder then considers the matter of selecting the unsafe act or "performance of person." He notes in the accident description that the injured employee was carrying a box in such a manner as to prevent him from seeing where he was going, so he selects as the code item "Handling box unsafely."

Then follows the selection of a personal cause or reason for the violation of safe practice. If the report shows that the employee had been warned and instructed the coder selects "Wilful disregard of instructions."

The determination of a mechanical cause is simple. There is nothing broken or weak, and guarding is not an issue—the coder thus selects "defective" as the correct item.

In narrative form the coded information can now be read as:

> Employee, wilfully disregarding instructions to carry material safely, falls on a defective wood floor and is injured.

Objective of Code Commitee

The primary objective of the Cause Code Committee has been to provide a practical code structure or framework. The particular headings and the items within these headings that have been selected are the best that the committee can conceive, but they may be amended without difficulty, as may be necessary. Such alterations need not in any way affect the structure or framework of the code.

There seems to be no disagreement, moreover, with the selection of the six main headings as listed and described herein. The code is so constructed that it can readily be expanded or condensed to meet cost and time limitations, without destroying its usefulness.

This is true primarily because the headings are mutually exclusive and because of the rules and definitions that have been provided.

In practical application the proposed code has been found to be workable and to produce results of greater specific value than could be obtained by use of other codes. It should go a long way towards meeting the growing and insistent demand for more and better factual data of value in the prevention of industrial accidents.

Safety Code Correlating Committee Elects L. F. Adams Chairman

L. F. Adams, General Electric Company, was elected chairman of the Safety Code Correlating Committee, the committee in charge of the safety code program of the American Standards Association, at its meeting June 11, succeeding C. E. Pettibone. Mr. Adams, who is also a member of the Standards Council, the Electrical Standards Committee, the United States National Committee of the Electrotechnical Commission, the Mechanical Standards Committee, and several sectional committees, represents the National Electrical Manufacturers Association. Mr. Pettibone, representing the National Association of Mutual Casualty Companies, has been chairman since 1933.

Holger Jensen, representing the National Bureau of Casualty and Surety Underwriters, was elected vice-chairman, and Cyril Ainsworth, assistant secretary of the American Standards Association, secretary.

Members of the Executive Committee elected at the June meeting of the Safety Code Correlating Committee are:

W. Dean Keefer, Director, Industrial Division, National Safety Council, Chicago, representing the National Safety Council

George P. Keogh, Industrial Code Referee, N. Y. Department of Labor, New York, representing the International Association of Industrial Accident Boards and Commissions

C. E. Pettibone, vice-president, American Mutual Liability Insurance Company, Boston, representing the National Association of Mutual Casualty Companies

H. A. Schultz, assistant to vice-president, U. S. Steel Corporation, New York, representing the American Iron and Steel Institute

V. A. Zimmer, Director, Division of Labor Standards, U. S. Department of Labor, Washington, D. C., representing the U. S. Department of Labor

In retiring as chairman of the committee, Mr. Pettibone expressed his appreciation of the support and interest of the members of the committee during his administration. He said:

"I believe there is a brilliant future for the Safety Code Correlating Committee. It has just entered on a period of development which will materially increase its importance in the American Standards Association, as well as its value in the national picture of accident prevention. Therefore, I retire from the office of Chairman with a feeling of optimism for the future of the Safety Code Correlating Committee; with the best of wishes to our future officers, and with sincere promise to maintain my interest in the Committee."

Action was taken by the Correlating Committee authorizing the chairman to appoint three committees to study problems submitted to it and report to the Committee. The problems to be studied are whether or not a proposed Safety Code for Plate and Sheet Metal Working should be developed, whether an Advisory Committee on Highway Traffic should be established, and how the safety code work and building code work of the American Standards Association can be correlated.

Courtesy General Electric Co.

L. F. Adams

Asks Project for Labeling Articles Made of Gold

The National Bureau of Standards has received a request from the New England Manufacturing Jewelers' and Silversmiths' Association, Inc., for the establishment of a Commercial Standard for Marking Articles Made of Gold in Whole or in Part.

It is expected that this project will cover nomenclature, definitions, weights, thicknesses, tolerances, marking, and labeling.

Standards Now Define Wrought-Iron Sheets

by

B. D. Landes

Manager, Engineering Service Department, A. M. Byers Company

Specify weight of zinc coatings for four classes of sheets; weights per square foot of uncoated sheets; composition; dimensions; tests

THE final step in the development of satisfactory standards covering uncoated and galvanized wrought-iron sheets was taken recently when the American Standards Association approved Standard Specifications for Uncoated Wrought-Iron Sheets[1], submitted by the American Society for Testing Materials as proprietary sponsor, and Standard Specifications for Zinc-Coated (Galvanized) Wrought-Iron Sheets[2], recommended to the ASA by the Sectional Committee on Zinc Coating of Iron and Steel.

First Metal Sheets

Wrought iron was the first ductile ferrous metal ever to be produced in sheet form. It was used for a long period of years and, until the steel-making processes were developed during the last half of the 19th century, it was the only ferrous metal available in sheet form.

Back in those days, of course, standards as we know them today were practically unknown and the term "sheet iron" meant wrought-iron sheets. Today, unfortunately, the same term is applied rather loosely to a number of different ferrous metals available as sheets with the result that confusion can be caused unless care is taken to definitely define the type of material required.

During the early 1900's the high cost of producing wrought-iron sheets, due to limitations in manufacturing methods, coupled with the introduction of the newer and less costly sheet metals, began to force wrought-iron sheets off the market. By 1915 or 1916 only a few companies were in a position to furnish wrought-iron sheets and a very few years later this product became practically non-existent on a commercial basis. Of course, the sheets could be furnished on special order but here again the cost was prohibitive.

The development and perfection of modern methods for producing wrought iron made possible the reintroduction of wrought-iron sheets to the market in 1930. It was realized that this type of sheet metal had a wide field of application. It had definitely proved its durability over a long period of years under many conditions where corrosion was a serious factor. Also, it was recognized that in order to eliminate the possibility

[1]ASA G23-1937; A.S.T.M. A 162-36.

[2]ASA G8.8-1937; A.S.T.M. A 163-36.

[3]The other approved standards in this series are: Zinc-Coated (Galvanized) Sheets (ASA G8b1-1931; A.S.T.M. A 93-27); Zinc Coatings on Structural Steel Shapes, Plates and Bars and Their Products (ASA G8.1-1933; A.S.T.M. A 123-33); Zinc-Coated (Galvanized) Iron or Steel Telephone and Telegraph Line Wire (ASA G8.3-1935; A.S.T.M. A 111-33); Zinc-Coated (Galvanized) Iron or Steel Tie Wires (ASA G8.4-1935; A.S.T.M. A 112-33); Zinc-Coated Iron or Steel Chain-Link Fence Fabric Galvanized After Weaving (ASA G8.5-1935; A.S.T.M. A 117-33); Zinc-Coated (Galvanized) Iron or Steel Wire Strand (Cable) (ASA G8.6-1935; A.S.T.M. A 122-33); Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses (ASA G8.7-1935; A.S.T.M. A 120-34 T).

of confusion, the establishment of good standards would be most desirable.

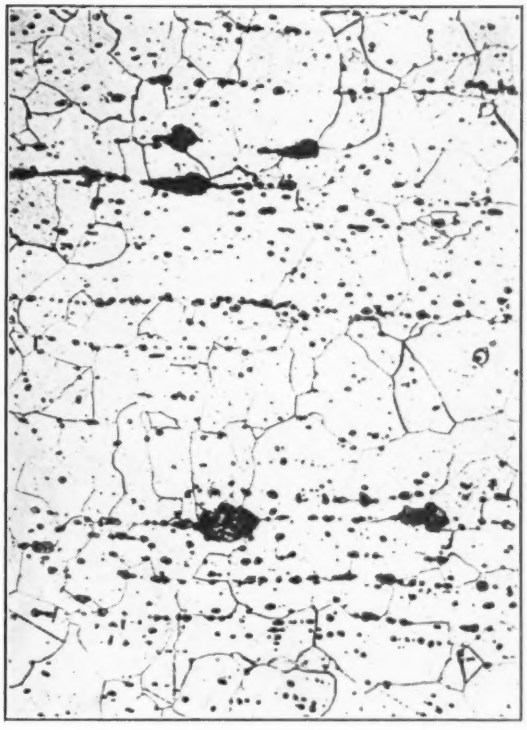
The first demand for good wrought-iron sheet specifications came from the U. S. Navy Department and, as the largest producer of wrought iron in this country, A. M. Byers Company prepared and published recommended standard specifications for both black and galvanized wrought-iron sheets in 1932. These specifications were by no means perfect but they did serve as a sound basis for future development.

Standards Recommended

In 1934, these Byers recommended standards for wrought-iron sheets were presented to Subcommittee IV on Plates, Shapes, and Sheets of A.S.T.M. Committee A-2 on Wrought Iron. This subcommittee made several changes in the specifications, after which they were presented and accepted as tentative standards by the American Society for Testing Materials in 1935. In accordance with the practice of A.S.T.M., these tentative standards remained in the tentative stage for a period of one year and, since no changes were deemed necessary, they were advanced to the status of standards by action of the Society in 1936.

Both of these standards were approved by the American Standards Association in 1937. The one on zinc-coated wrought-iron sheets was reviewed by the Sectional Committee on Zinc Coating of Iron and Steel and was recommended to the ASA for approval by that committee. It is the eighth in the series of standards on zinc coating to be approved by the ASA since the organization of the committee[3].

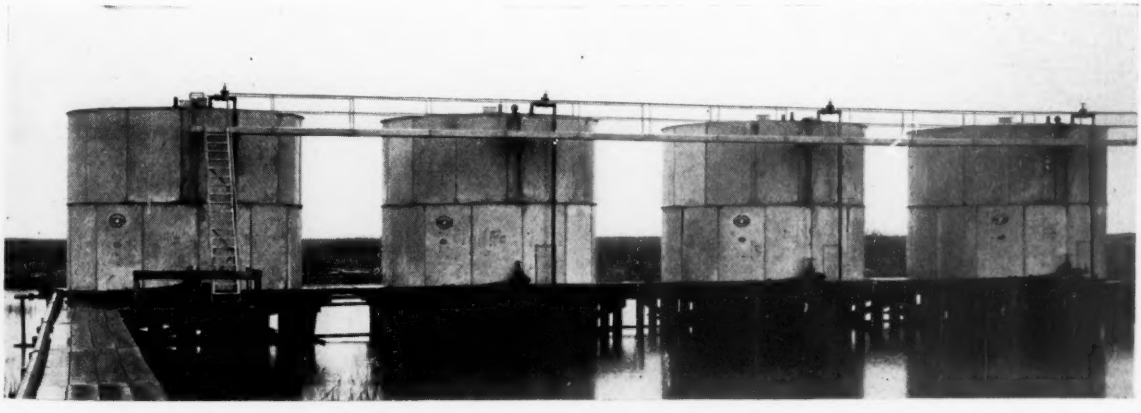
The quality requirements of both specifications define wrought iron of high quality. This is most



Photomicrograph of 12 gage wrought-iron sheet (flat black) 60 in. x 100 in. No. M-2-2 100 X

Analysis	
Carbon	**.025 per cent**
Manganese	**.035**
Phosphorus	**.120**
Sulphur	**.020**
Silicon	**.130**
Slag	**2.50**

Courtesy A. M. Byers Company



Oil lease tanks constructed of galvanized wrought-iron sheets. These 1,000 barrel capacity tanks, owned by one of the large producers, are located in the lower reaches of the Bayou section of southern Louisiana.

clearly indicated in the clauses covering "Process" and "Chemical Composition." As in all other A.S.T.M. specifications covering wrought-iron products, the material is defined as follows:

> "*Wrought Iron*—A ferrous material, aggregated from a solidifying mass of pasty particles of highly refined metallic iron with which, without subsequent fusion, is incorporated a minutely and uniformly distributed quantity of slag."

It should be remembered that wrought iron is an entirely different material than other commonly used ferrous metals from the standpoint of both chemical composition and physical structure. When the metal is rolled the silicious slag content, which averages about 2.5 to 3.0 per cent by weight, is distributed throughout the pure iron base metal in the form of threads or fibers which generally extend more prominently in the major rolling direction. The presence of these slag fibers gives the metal a structure, which, for the sake of comparison, is sometimes likened to that of hickory wood.

Due to this hickory-like structure, one of the outstanding characteristics of wrought iron is its ability to take on a heavy, adherent, natural coating. This fact was taken into account in the preparation of the specifications covering zinc-coated sheets and the requirements for coating adherence are more severe than the corresponding requirements for steel sheets, as given in the A.S.T.M. specifications A 93; ASA A8b1-1931.

The reason that a heavier and tighter natural hot-dip zinc coating can be applied to a wrought-iron surface is of interest. When the metal is pickled before being dipped in the spelter bath, the pickling acid attacks the surface unevenly, due to the presence of the slag filaments or fibers, and leaves it slightly roughened. Obviously, a clean, roughened surface affords a better anchorage for any type of coating than an equally clean surface that is smooth, because the coating is actually keyed in place.

Four Weights of Coating

The specifications for zinc-coated wrought-iron sheets provide for four coating weights. The Class A—Extra Heavy Coating—calls for a coating of 2.75 ounces per square foot. This specification recognizes the standard methods for determining coating weights and, therefore, is in keeping with best known practice. For the Class B—Heavy Coating—the specifications require a coating of 2.50 ounces per square foot, except in the light gages No. 26 and 28 which call for 2.25 and 1.75 ounces per square foot, respectively. Class C—Moderately Heavy Coating—calls for 2.00 ounces per square foot in the heavier gages up to No. 18; 1.75 in gages No. 18, 20, and 22; 1.50 in gage No. 24, and 1.25 in the lightest gages No. 26 and 28. Class D, which are ordinary sheets for general utility are to have coatings approximating those of Class C except in the medium and light gages, in which class the coating may be appreciably lighter. No definite weight of coating is guaranteed in Class D, and sheets are not subject to coating tests.

The users of sheets are, in many cases, prone to compare sheet material on the basis of thickness. It may be of interest, therefore, to point out that the U.S. sheet gage is established on a weight basis rather than a thickness basis. This weight gage was developed and adopted many years prior to the introduction of steel and is based on the

Committee on Zinc Coating Is Widely Representative

The Sectional Committee on Zinc Coating of Iron and Steel (G8), which reviewed the Standard Specifications on Zinc-Coated (Galvanized) Wrought-Iron Sheets, and recommended its approval by the American Standards Association, represents all organizations interested in such materials.

The representative nature of the sectional committee is shown in the following list of members:

J. A. Capp*, American Society for Testing Materials, *Chairman

A. B. Campbell*, Edison Electric Institute, *Secretary

American Society for Testing Materials (Sponsor), *John A. Capp, H. O. Hill, E. F. Lundeen, H. E. Smith*
American Association of Port Authorities, *Charles W. Staniford*
American Electro-Platers Society, *G. B. Hogaboom*
American Gas Association
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American Zinc Institute, *George C. Bartells*
Association of American Railroads, Engineering Division, Construction and Maintenance Section, Roadway Committee, *W. C. Pruett, H. H. Harman (alt.)*

weight of wrought iron at 480 pounds per cubic foot. It is still in use with steel sheets although steel weighs 490 pounds per cubic foot.

Since the U.S. sheet gage is a weight gage, it is obvious that for any one gage there is a corresponding thickness which is generally referred to as "approximate thickness." Incidentally, in the specifications for galvanized wrought-iron sheets the weight of the sheets is set up on the long-adhered-to basis where the weight of any one gage of galvanized sheet is the same regardless of coating weight. This procedure is followed primarily for the purpose of simplification where sheets are ordered on a weight basis with respect to surface coverage.

For example, an 18 gauge black sheet weighs 32 ounces per square foot and an 18 gauge galvanized sheet, regardless of coating weight, weighs 34.5 ounces per square foot. From this it can be seen that the practice of specifying the galvanized sheet weight is based on the weight of black sheet plus 2.5 ounces per square foot of coating. For coating weights lighter than 2.5 ounces per square foot, the black sheet weight must be correspondingly heavier than the required or theoretical black sheet weight in order to reach the total weight of the galvanized sheet.

Any material specification should meet two very important requirements, which are:

(1) It should be sufficiently rigid to exclude material not of the quality desired and,

(2) It should be broad enough to include the product of any reputable manufacturer that is produced in accordance with standard practice.

The latter requirement, in other words, serves to eliminate any provisions which would be of no practical benefit to the purchaser and which might impose unnecessary hardships upon the manufacturer. It is believed that both of the wrought-iron sheet specifications meet these requirements.

British Prepare Paper Sizes For Adoption as Empire Standard

Standard paper sizes, recently approved by the British Standards Institution, have been prepared with the idea that eventually they may be adopted as standard sizes for the entire British Empire. The sizes have been established for writing and printing paper, wrapping paper, and for casings and trimmed boards.

Thirty-four sizes of writing and printing paper, 10 sizes of wrapping and casing paper, and five sizes of trimmed boards were decided upon. It was found, however, that a few additional sizes could not be omitted because of the fact that official publications have been issued in one or more of these sizes for a number of years. These additional sizes are given in an appendix but, it states, although they are recognized they can only be obtained if a sufficiently large order justifies their being made.

Suggestions are made for listing and invoicing, weight, packing, and indicating substance.

This system of paper sizes, which is based on work carried out several years ago by the Fedation of Master Printers and Allied Trades of the United Kingdom of Great Britain and Ireland, was prepared at the request of the Australian Standards Association. It covers the sizes now in use in Great Britain and in the Dominions with the exception of India. Because the Indian sizes differ somewhat, the Indian authorities have been invited to go into the matter in detail and to review the matter in two years.

Copies of the standard, B.S.S. 730-1937, can be ordered through the office of the American Standards Association.

National Conference on Weights, Measures Elects Briggs President

Dr. Lyman J. Briggs, Director, National Bureau of Standards, was elected president by the National Conference on Weights and Measures at its twenty-seventh annual meeting June 1 to 4. Other officers are: W. S. Bussey, Texas; C. J. P. Cullen, Pennsylvania; J. J. Levitt, Illinois; R. E. Meek, Indiana, *Vice-Presidents;* F. S. Holbrook, National Bureau of Standards, *Secretary;* and George F. Austin, Jr., Detroit, Mich., *Treasurer.*

The conference endorsed a bill to standardize the sizes of cans for food products, and a proposal to amend certain specifications and tolerances for commercial weighing and measuring apparatus, particularly tolerances for vehicle scales.

It also endorsed a proposed bill to fix the standards of weight and measure for the United States.

Two hundred and thirty-one members and guests attended the conference, and delegates from 31 states and the District of Columbia were present, as well as representatives of manufacturers of weighing and measuring appliances and others interested in weights and measures.

ASA Committee Proposes Standard For Measuring Sound Transmission

Proposed tentative standards for measuring sound transmission have been agreed upon by a subcommittee of the Sectional Committee on Acoustical Measurements and Terminology, and are now being circulated for general comment and criticism. They are intended to provide standard practice in the measurement of the transmission of sound from air to air by way of intervening partitions and in stating the results of such tests.

The proposal as agreed upon by the subcommittee is given in full below.

Any suggestions or comments should be sent to Professor F. R. Watson, University of Illinois, Urbana, Ill., chairman of the subcommittee.

1. *Terminology*

The numerical measure of the reduction of the sound intensity in transmission shall be the Transmission Loss in Decibels, or more briefly, Transmission Loss. This is defined as ten times the logarithm (base 10) of the reciprocal of the acoustic transmitivity. The latter is defined as the ratio of the rate of flow of transmitted sound energy away from the partition to the rate of flow of incident sound energy. Unless otherwise specified, measurements are to be made with a diffuse distribution of the incident and transmitted sound.

2. *Test Conditions*

Measurements shall be made of the relative average density, E, of diffuse sound in two enclosed spaces which are separated from each other by the partition undergoing test and otherwise acoustically isolated from each other. On the assumption of the reverberation theory, Transmission Loss as defined above is given by the equation:

$$\text{Transmission Loss} = 10 \log_{10} \frac{E_1 S}{E_2 a_2}$$

in which

E_1/E_2 = ratio of sound density on the transmitting side to the sound density on the receiving side.

S = area of the test partition.

a_2 = equivalent absorption of the receiving room.

Since room resonance in small rooms, particularly at low frequencies, may affect the density of sound from a given source, precautions are to be taken to allow for such resonance effects as far as possible.

3. *Test Frequencies*

Since the transmission loss of a given partition is a function of the frequency, tests shall be made over a frequency range, extending from 125 to 4000 cycles per second, or the practically equivalent range of five octaves of the physical scale from 128 to 4096 cycles per second.

Tests shall be made at no less than nine different frequency bands within this range at approximately half octave intervals. In the frequency range from 125 to 1000 cycles per second measurements shall be made at twice as many frequencies as in the range from 1000 to 4000 cycles per second.

4. *Specifications as to size and mounting of test panels.*

The size of the test partitions shall approximate the dimensions of actual building constructions, if possible, and in any case, the smallest dimension shall not be smaller than six feet. The test partition shall be rigidly built into an opening in massive masonry in a manner to conform as nearly as possible to the conditions of actual use.

In testing doors and windows, these shall be hung or framed in a manner approximately that of usual building construction. These tests shall be made on units that are approximately of commercial size.

5. *Statement of Results*

Reports of tests shall give the transmission loss at each of the test frequencies or frequency band. Until further investigation shall dictate the assignment of different weighting factors to different frequencies, the average of the transmission loss for all the test frequencies may be taken as a numerical measure of the sound insulating properties of a given construction. Any special weighting of the transmission loss at different frequencies shall be made with reference to the frequency spectrum of the sound against which the insulation is desired.

Industry Asks Standard For Concrete Burial Vaults

The National Concrete Burial Vault Association has asked the cooperation of the National Bureau of Standards in establishing a Commercial Standard for Concrete Burial Vaults.

It is expected that the project will cover materials, workmanship, finish, minimum requirements of design, size designations, etc.

Technical Committee Starts Investigation On Effect of Using Pipes for Grounding

The study of grounding described in this article, undertaken by the American Research Committee on Grounding to determine whether standard grounding requirements now widely used should or should not be changed, was originated by questions raised in the American Standards Association when the 1935 edition of the National Electrical Code was submitted for approval as American Standard.

AS A FIRST step in its study of the effect of grounding electric circuits on piping systems, the technical subcommittee of the American Research Committee on Grounding has invited water companies near New York to report cases of water or piping trouble which might be due to electrical grounding.

This action was reported by the subcommittee to the Research Committee at its meeting on June 16. Seventeen water purveyors within a radius of 100 miles of New York were invited, the limit being set in order to minimize time and expense in traveling.

Although no replies have been received to these invitations, the technical committee reported, 22 cases have been brought to the attention of individual members of the subcommittee, and 16 of them have been investigated. A number of these were in the territories of water purveyors to whom the invitations were sent.

The technical committee reported that the complaints may be listed as follows:

Sediment in water	2 cases
Blue or green stain	7 "
Rusty water	2 "
Failure of boiler tubes	2 "
Service or house pipe corrosion	4 "
Electric spark	1 case
Taste and odor	1 "
Miscellaneous	3 cases
Total reported	22 cases

None of the investigations is considered to be finally completed.

While the field investigation varies with each situation, in general the procedure is as follows:

1. The local water purveyor, the local electric company, and sometimes the local gas company participate in the investigation.
2. The history of the complaint is reviewed and recorded.
3. A record was obtained of the water and gas piping systems involved, including main, service, and house piping. A record is also obtained of the type and condition of the electric services and house wiring involved.
4. Measurements are made and recorded of currents, both alternating and direct, at various locations on the premises, with an artificial load where necessary to make adequate measurements.
5. Samples of the water are taken for analysis, where pertinent.
6. Where sediment is found to be involved, a milk filter with cotton discs is used. A definite quantity of water is passed through the filter. The appearance of the disc gives a simple method of determining visually the amount of sediment.
7. Samples of pipe or fittings are obtained, where pertinent.

"The development of a technique for these investigations has taken some time, particularly for the earlier cases. In general, one or two visits have been made to each location," the technical committee reported.

"In most of the sixteen cases the cause of the complaint could not be attributed to any single factor. In some of the cases where alternating current was found, removal of the alternating current has not to date substantially altered the manifestation causing the complaint. However, this does not definitely show that alternating current does or does not contribute to the effects but rather that other factors, such as high water temperature of water heaters, galvanic couples due to dissimilar metals in use in plumbing work, and differential aeration, may have been more important in these particular cases.

"Where more than one factor contributes to the cause of complaint, the exact part each factor plays in the final result cannot readily be determined in the field. Likewise, the removal of one cause, such as galvanic couples, by the use of insulating bushings, removes other factors as well, such as the flow of alternating current on the section of pipe.

"It appears that a laboratory study may lead to the determination of what part such factors

play in causing the complaint, and may permit the field investigators to determine more accurately the exact cause of the complaint."

The American Research Committee on Grounding approved the recommendation of the subcommittee that:

1. **A study be made to determine whether or not laboratory investigations would facilitate the investigation and, if so, to prepare for consideration a program of such laboratory tests and means for carrying out these tests.**
2. **The field investigations be continued. The analysis of sufficient data is necessary to develop methods of testing and good practice in controlling causes of complaint.**

In presenting its report, the technical subcommittee pointed out that in none of the cases so far studied are the results to be regarded as final.

S.A.E. Handbook Includes New, Revised S.A.E. Standards

The *S.A.E. Handbook* for 1937, including all current standards and recommended practices adopted by the Society, was issued recently and can be ordered through the ASA office or from the Society of Automotive Engineers, 29 West 39th Street. The price per copy is $5.00.

New and revised standards adopted during 1936 are published in full in the *Handbook*, under such headings as Units, Parts, and Fittings; Processed Materials; Fabricated Materials; Screws, Bolts and Washers; Tests, Ratings, and Codes; Transportation and Maintenance; Tools and Production Equipment; Nomenclature and Definitions.

These standards are the outgrowth of activity started in 1902 when standard spacing of tire lugs and holes, rim sections, and lamp brackets was adopted by the National Association of Automobile Manufacturers.

The Society of Automobile Engineers was organized in January, 1905. In 1910 this Society took over from the mechanical branch of the Association of Licensed Automobile Manufacturers the work that organization had been doing in preparing technical data, and appointed the first Standards Committee in the automotive industry.

In 1917 the American Society of Aeronautic Engineers and the Society of Tractor Engineers merged with the S.A.E., which had organized committees for standardization in these fields of engineering. The National Association of Engine and Boat Manufacturers and the National Gas Engine Association soon merged their engineering and standardization in the S.A.E., and the Society of Automobile Engineers became the Society of Automotive Engineers.

"As mass production rapidly became the fundamental basis for automobile manufacturing, the Society in 1926 fostered standards in production engineering for automotive manufacturing," says the Foreword to the *S.A.E. Handbook*. "This new field of standardization has since become a national project for all industries and the Society is cooperating in it under the procedure of the American Standards Association.

"The Society is a sponsor for and is represented on sectional committees under the procedure of the American Standards Association, of which it is a member. The Society is also engaged in international standardization projects by representation through the American Standards Association which is a member of the International Standards Association."

The Society of Automotive Engineers is now represented on 39 committees on national standardization projects under the American Standards Association. These committees, with the names of the S.A.E. representatives, are listed in the *Handbook*.

Fifty-two approved American Standards are of special interest to the automotive industries, according to the section on "American Standards," which lists these standards with their ASA symbol and price. Ten of these 52 are also S.A.E. standards, according to this list.

Canadian Association Issues Specifications for Timber

Specifications for Structural Timber, issued by the Canadian Engineering Standards Committee, include specifications for joists and planks, beams and stringers, and posts and timbers. Tables of working stresses are included, as well as notes on the stresses for structural grades. Two grades are covered: Select structural and common structural. Special provisions are included covering Dense Douglas Fir (Coast).

In the specification, timber has been classified in accordance with its structural uses, and under each use the requirements for each grade are specified in detail.

The tables of safe allowable working stresses are based on tests made by the Forest Products Laboratories of Canada.

The C.E.S.A. gives acknowledgment to the American Society for Testing Materials for the use of material from A.S.T.M. specification D245-33.

Copies of the specification (C.E.S.A. A43-1937) may be ordered from the American Standards Association, or the Canadian Engineering Standards Association, Ottawa, Canada, at 25 cents.

New Sectional Committee to Revise National Electrical Safety Code

by

A. B. Campbell[1]

Secretary, Sectional Committee on National Electrical Safety Code

A MEETING of a new sectional committee, organized to revise the National Electrical Safety Code, was held at the National Bureau of Standards on May 24, at which time plans for committee and subcommittee organization were made and general plans for the revisions were decided upon.

This reorganized sectional committee will consist of one representative from each of the following organizations:

American Institute of Electrical Engineers
American Mutual Alliance
American Society of Safety Engineers—Engineering Section of National Safety Council
American Transit Association
Association of American Railroads
Association of Edison Illuminating Companies
Edison Electric Institute
ASA Fire Protection Group: Associated Factory Mutual Fire Insurance Companies; National Board of Fire Underwriters; National Fire Protection Association; Underwriters' Laboratories
International Association of Electrical Inspectors
International Association of Governmental Labor Officials
International Association of Industrial Accident Boards and Commissions
International Brotherhood of Electrical Workers
National Association of Railroad and Utilities Commissioners
National Bureau of Casualty and Surety Underwriters
National Bureau of Standards
National Electrical Contractors' Association
National Electrical Manufacturers' Association
National Municipal Signal Association
Public Service Commission of New York
Public Service Commission of Wisconsin
Telephone Group
ASA Telephone Group: Bell Telephone System

The work of revising the code will be done by one sectional committee instead of by two sectional committees as in the former revision which resulted in the present edition.

At the meeting on May 24th, it was decided to designate the sub-groups, which deal with major assignments in this revision, as technical committees, and that a technical committee would be formed on each of the following subjects:

Section 9, Rules covering methods of protective grounding.

Part 1. Rules for the installation and maintenance of electrical supply stations, and operating rules for same.

Part 2. Rules for the installation and maintenance of overhead and underground electrical supply and communication lines, and operating rules for same.

Part 3. Rules for the installation and maintenance of electric utilization equipment.

Part 5. Rules for radio installations.

Part 4, which contains rules for the operation of electric equipment and lines, will be revised by two of the technical committees, each of which will consider those rules in Part 4 which concern its scope.

There is a possibility that one other technical committee may be formed to consider Section 1 which contains definitions of special terms. For

National Electrical Safety Code Accepted by State Authorities

The National Electrical Safety Code contains certain requirements based on safety and which affect the construction, maintenance, and operation of systems for the supply of electrical energy for light, heat, and power. Some requirements are included affecting communication and signal systems and radio installations.

This Code is widely used as a reference and guide and has been accepted in whole or in part by many state regulatory authorities and by a few municipalities. In its third and present (fourth) editions it has been given the status of an American Standard by the American Standards Association.

[1]Edison Electric Institute, New York.

the present, the formation of a technical committee on this subject is held in abeyance until the other technical committees can undertake their work and it can be determined if a technical committee on the subject of Definitions will be necessary.

It is the general plan to invite each organization represented on the sectional committee to have a representative on each of the technical committees on which it desires representation. The Technical Committee on Part 2 is an exception to this as it covers several subjects of a varying nature. In this case, some of the organizations which have a major interest in the rules in this part of the Code may be represented by more than one representative. It is also planned to invite representatives from organizations not represented on the sectional committee, to designate representatives on each of the technical committees in which they may have a particular and substantial interest.

The membership of this sectional committee by groups is as follows:

Regulatory Authority or Influence	8
Utilities	
Transportation	2
Communication	2
Power	2
Employees	1
Technical Societies and Independent Experts	2
Insurance	3
Manufacturers	1
Contractors	1
TOTAL	22

The following sectional committee officers have been elected:

M. G. Lloyd, National Bureau of Standards, *Chairman.*

C. B. Hayden, Wisconsin Public Service Commission, *Vice Chairman.*

A. B. Campbell, Edison Electric Institute, *Secretary.*

Any suggestions for modifying the present edition of the Code, or requests for representation on technical committees by groups which have a special interest in any particular part of the Code, should be addressed to Dr. M. G. Lloyd, National Bureau of Standards, Washington, D. C.

Sale of British Standard Report Shows Interest in Quality Control

Interest in scientific quality control applied to manufacture of products and inspection of goods purchased is evidenced by the sale through the American Standards Association office of 160 copies of the British report, *The Application of Statistical Methods to Industrial Standardization and Quality Control*, by E. S. Pearson.

The February, 1936, issue of INDUSTRIAL STANDARDIZATION carried an announcement of publication of the report, British Standard No. 600. Since then the 160 copies, which have been supplied on approval to engineers, colleges, statisticians, and others interested, have all been purchased.

Copies may still be ordered through the ASA office at $1.75 each.

Ainsworth Attends International Sessions on Accident Prevention

Cyril Ainsworth, assistant secretary of the American Standards Association, is in Europe to attend the eighth session of the committee on accident prevention of the International Labor Office, at Geneva. Meetings of the committee were to be held June 28-30.

The agenda of the session was scheduled to include: discussion of drafts on safety in the use of ladders, safe handling of corrosive liquids, protection of the hands and feet of workers employed in metal works and iron foundries, and protective screens.

Swen Kjaer, U. S. Bureau of Labor Statistics, Henry A. Reninger, Lehigh Portland Cement Company, and Mr. Ainsworth are the three American members of the committee on accident prevention of the International Labor Office.

Committee Prepares Handbook On Interior Wiring Design

The *Handbook of Interior Wiring Design*, described on page 148 of the May issue of INDUSTRIAL STANDARDIZATION, was prepared by the Industry Committee on Interior Wiring Design, on which eight organizations are represented. They are:

Artistic Lighting Equipment Association
Edison Electric Institute
Illuminating Engineering Society
International Association of Electrical Inspectors
National Electrical Contractors Association
National Electrical Manufacturers Association
National Electrical Wholesalers Association
Radio Manufacturers Association

Copies of the *Handbook* can be obtained from any of these organizations as well as from the Committee, 420 Lexington Avenue, New York, at $1.00 each.

Consumer-Retailer Relations Council To Promote Consumer Program

FOUR milestones have been passed in the consumer standards movement since last September, H. W. Brightman, chairman of the Advisory Committee on Ultimate Consumer Goods, told the American Home Economics Association at its annual meeting at Kansas City, June 21.

Milestone Number One, Mr. Brightman said, was the formation of the Advisory Committee on Ultimate Consumer Goods of the American Standards Association.

Milestone Number Two was the evening session devoted to a discussion of consumer-retailer relations during the annual convention of the National Retail Dry Goods Association.

Milestone Number Three was the publication by the National Retail Dry Goods Association of a voluntary platform for its future relations with the consumer.

Milestone Number Four was announcement of a plan to organize a National Consumer-Retailer Relations Council.

In announcing the Council to the American Home Economics Association, Mr. Brightman said:

"To the active membership of this council will be eligible

"1. National associations of consumers which include consumer education as a part of their work program, and

"2. National associations of retailers.

"It will make eligible to associate membership: representatives of federal agencies, national associations of advertisers, national associations of manufacturers, Better Business Bureaus, and other groups having a substantial interest in the work of the council.

"The objects of this Council, which is at all times to be consumer-dominated, as announced in its By-Laws, are:

(*a*) To stimulate interest on the part of consumers, distributors, manufacturers, and the general public in the value of adequate standards for consumer goods.
(*b*) To promote the general use of such standards.
(*c*) To promote the general use of informative labeling.
(*d*) To promote the use of uniform terminology in describing consumer goods and services.
(*e*) To promote truthful and informative local and national advertising of all kinds.
(*f*) To promote informative salesmanship.
(*g*) To develop and promote the use of suggested codes of ethics for both retailers and consumers.
(*h*) To encourage practices which will tend to reduce abuses of such privileges as customer accounts, returns, deliveries, and similar services.
(*i*) To foster local cooperation between stores or groups of stores and local consumer groups.

"It should be plain from a listing of the objects of the Council that its work is intended to supplement the program of the Advisory Committee on Ultimate Consumer Goods. Under the procedure of the American Standards Association the work of the Advisory Committee, of which your own Ruth O'Brien is vice-chairman, is limited to the development of standards on consumer goods. You can see that the work of the Council is to be far broader in scope.

Council Plans Action

"During the coming year, the Council, getting under way in the Fall will plan:

"1. To encourage all national associations of retailers to adopt a consumer relations program similar to the one just issued by the NRDGA and to stimulate through those national retailer asociations the active interest and cooperation of their member stores in following out the principles of such a platform:

"2. To encourage all national consumer organizations, which have retailer-consumer relations as a part of their work programs, to place *added emphasis* on this phase of their programs in cooperation with the council: and to encourage other national consumer organizations, whose character is such that they might well incorporate consumer education in their programs, *to institute such programs* in the near future:

"3. To encourage manufacturers of consumer goods through their national associations to cooperate in the objectives of the Council:

"4. To encourage national advertisers through their associations to cooperate with the council in the direction of wholly truthful and informative advertising in the interests of the consumer:

"5. To provide through national organizations of both retailers and consumers, suggested programs of city and statewide cooperation on the part of local stores or groups of stores and local consumer organizations and individuals.

"6. To provide a clearing house of information in consumer buying for the benefit of consumer, retailer, and educator alike."

N.R.D.G.A. Officially Affirms Consumers Standards Program

THE National Retail Dry Goods Association has gone on record as officially sponsoring a program to advance the movement for consumer goods standards. This action was taken when a "voluntary platform" stating the Association's policy for the 5,800 department, dry goods and specialty stores which are its members was adopted by the N.R.D.G.A. Board of Directors. Sales of these N.R.D.G.A. member stores reach a total of more than $4,000,000,000 annually.

The platform, called by one commentator "the most sweeping set of principles ever devised for retailing," outlines relationships with government, consumers, employees, and vendors, and states the policy of the association on child labor.

The section on Merchandise Standards outlines plans for a long-term program for merchandise standards, including cooperation with manufacturers and with governmental bureaus and consumer organizations. It recommends that merchandise standards be submitted for the approval of the American Standards Association, and that in cases in which legal enforcement is desirable the Federal Trade Commission be requested to recognize standards so approved. Labeling as buying guides to consumers, publicizing facts about merchandise, and establishment of a standard procedure for certifying commodities were indorsed.

The section on Merchandise Standards adopted by the N.R.D.G.A. Board of Directors is given below:

Merchandise Standards

1. The further development of an extensive long-term program for the creation of merchandise standards in staple and semi-staple goods, for the purpose of protecting and assisting the consumer and eliminating waste in industry—such standards to cover grades, construction, performance, size, durability, &c.; methods of testing to insure the foregoing; and machinery for revising these standards from time to time so that they may be kept up to date.

2. The solicitation of the cooperation of national associations of manufacturers to assist in the initiation and development of this program of merchandise standards. We recognize that in order to promote universal use of any standards so developed, that it is important to have as collaborators in the work of establishing such standards various commercial and store laboratories, the National Bureau of Standards, the Bureau of Home Economics, the Bureau of Agricultural Economics, the Food and Drug Administration, various national consumer organizations and the Consumer-Retailer Relations Council.

As such merchandise standards are established and revised, we recommend that the endorsement of the American Standards Association be secured through the advisory committee on ultimate consumer needs so as to designate such approved standards as American Standards; and that when advisable the Federal Trade Commission be requested to recognize such approved standards.

3, Standard Definition of Terms—The development, with the cooperation of the aforementioned groups of a universal dictionary of terms to be used in retailing to describe various types of merchandise, their characteristics, performance, grades, finish, construction, &c., so that consumers will find like merchandise in all stores described basically in the same way and be able better to judge values, uses and limitations.

This dictionary should serve as a guide to be followed in specifying merchandise to be bought and in describing merchandise to be sold. It should be used by copy writers as a basis for advertising copy; by store personnel groups for instruction of salespeople in merchandise information; by testing laboratories in reporting on merchandise examined and by manufacturers in describing merchandise for sale. A special edition expressed in simple, non-technical language should be issued for the use of consumers.

4. Labeling—the further development, with the cooperation of the aforementioned groups, of an extensive practical program of informative labeling of merchandise to serve as buying guides to consumers, including grade labeling in the case of staple merchandise.

5. Factual Merchandise Publicity—The further development of a constructive program which will go far toward eliminating representations in regard to merchandise which are exaggerated, misleading, inaccurate or inadequate, substituting therefor a constructive program of adequate factual presentation of merchandise through all types of advertising, labels, signs and statements of salesclerks. This program should provide for clear and concise statements of content, construction, durability and serviceability, where such information is of importance to consumers in enabling them to judge better intrinsic value and usability. It should include, but not be limited to: (a) Fiber identification of piece goods, apparel and other merchandise made of cotton, wool, silk, linen, or synthetic materials, or combinations of these fibers. (b) Definite statements concerning the degree of washability, including color permanence, per cent of shrinkage, tensile strength, sizing, weighting, &c., together with information for reconditioning, and for proper handling to give longer wear and greater satisfaction. (c) Identification of material used in other lines of merchandise, such as woods used in furniture, together with fair estimates of performance and durability of household appliances and furnishings, &c.

5. Valid Certification—The establishment of a basis for sound technical investigation and a standard procedure to be followed by retailer, manufacturer and advertiser when certifying commodities to the public, which shall include publicity of the methods of testing and rating used as a basis for such certification.

The Consumer Movement— A Boon to Merchandisers

New opportunity to sell goods, advertising writer says; urges Advertising Federation of America to develop technique based on facts

by

Mrs. Lois B. Hunter[1]

N. W. Ayer & Son

ADVERTISING is our job. And it has been a good job. We can look back over twelve or fifteen years of such improvements in merchandise as the world has never seen in an equal period.

But we have not done a good enough job, or a corrective could not have come along and developed to mammoth proportions right under our noses. Some of us have been so busy doing a good job that we do not even see the size of this mammoth today. Nor its sales-getting possibilities.

It was a great day for all of us when the left wing began to be articulate enough to catch the public's attention. Because on that day the right wing of this *Consumers Movement* was born.

Let's get down to cases on what this right-wing Consumers Movement can mean in our sales planning, for both manufacturers and retailers:

One of the ready-to-wear merchandise managers of Fifth Avenue remarked about this "Consumer Movement," "Let the girls have their fun: we'll play along with them until they drop this toy and pick up the next one." That is one reaction of many manufacturers and retailers. They are the people who have traveled too little, lately, across these United States.

Another group of manufacturers and retailers is represented by a man of great advertising reputation who said, "Now, Mrs. Hunter, you and I both know that the world has always had a lunatic fringe; your problem and mine is to stay out of that bunch of half-wits, or, at least, to keep from being identified with it!" This man is the type who hates to be jarred loose from his accustomed moorings.

The third reaction, and the one I hope to sell solidly to all this audience, is "*Here, on your respective front door-steps, in this right wing Consumers Movement, is our greatest opportunity to sell goods and sell confidence.*"

Mrs. Consumer will be critical, of course, where she does not understand. Mrs. Consumer is asking, millions of her, for information. Advertisers must think beyond specifications, laboratory tests, and measurements, to the *Reasons Why and How*, in our advertising planning. There are public relations of the right sort back of the curtains of every business that produces and sells goods and services. Give Mrs. Consumer facts; give her merchandise standards.

If a one-cent sale is a selling game, why not explain that you are attempting to introduce a new product or to increase traffic at a lagging part of the season in that corner of the main floor —instead of leaving Mrs. Consumer to wonder whether that article is being priced at double its value when she buys it next? Why not explain why prices slide downward through a season? Analyze our selling tricks for the real human interest story, and then tell the truth. In Mrs. Consumer are increased sales and more confidence in your institution.

8,000,000 Women Interested

First, let us examine the Consumers Movement. We asked Roger Wolcott, of Boston, making himself famous as a pioneer in the field of informative labels and tags, what he knew about the size of this movement. We reviewed the speeches at that epoch-making meeting of the National Retail Dry Goods Association last January. We read that now-famous May 17th issue of *Retailing* from

[1]Mrs. Hunter, now a member of the staff of one of America's best-known advertising agencies, speaks from 15 years of department store experience as advertising copywriter, advertising manager, publicity director, and executive vice-president and member of Boards of Directors. Her address, abstracted here, was delivered before the Thirty-third Annual Convention of the Advertising Federation of America, New York, June 20-23.

cover to cover. We talked with Dr. Agnew of the American Standards Association, national clearing house for standards since 1918. We talked with manufacturers, particularly of fabrics, because the hasty introduction of rayons certainly helped to bring this Consumer Movement to a head.

The net result of all this is emphatic assurance that this Consumers Education Movement is here. Eight million women, and more, are ready to be used in every manufacturer's and retailer's sales promotion plan. Eight million organized women of the most thoughtful type, whose daughters are discussing us, and what we do in stores and factories, in every school and college classroom.

Advisory Committee Impressive

Glance over this list of governmental, retailing, and consumer organizations represented on the Advisory Committee of Ultimate Consumers Goods, organized by the American Standards Association:

American Association of University Women, *Faith Williams;* American Home Economics Association, *Ruth O'Brien;* General Federation of Women's Clubs, *Josephine J. Daggett;* National Association of Purchasing Agents, *G. A. Renard;* National Congress of Parents and Teachers, *Florence Fallgatter;* National League of Women Voters, *Louise G. Baldwin;* National Retail Dry Goods Association, *F. W. Binzen* (J. C. Penny Co.), *Robert Blum* (Abraham & Strauss), *H. W. Brightman* (L. Bamberger & Co.), *Ephraim Freedman* (R. H. Macy), *Arthur G. Kaufman* (Gimbel Bros.), *J. F. Kargeson* (Marshall Field), *D. M. Nelson* (Sears, Roebuck), *Irwin D. Wolf* (Kaufman's Department Store); U. S. Department of Commerce, National Bureau of Standards, *A. S. McAllister;* U. S. Department of Labor, Consumers' Project, *S. P. Kaidanovsky;* Members at-Large, *Blanche W. Hendrickson* (Chairman, Advisory Committee on Consumer Interests, New York World's Fair), *Pauline Berry Mack* (Pennsylvania State College), *Paul Nystrom* (Professor of Marketing, Columbia University).

The impressive list of names, organizations and governmental departments needs no further discussion. The Consumers Movement is emphatically here; a blessing to every planning desk!

The left-wing consumers movement is also present. Every sort of activity needs its corrective; this left wing is and should be constantly verbal. Its very presence among us will make right-wing consumers, manufacturers, and retailers join hands to build merchandise standards, together, to spread the facts about these merchandise standards, together, to plan together. Never discount this left wing.

Retail Price Haggling Obsolete, Eliminate Fact Haggling?

Not so long ago, price haggling was practiced in retail selling. For the most part retail selling was a matter of bargaining up and down the price scale. Today most reputable stores wouldn't consider anything but the one-price system and they insist that the price be affixed to the article in such a way that it will be plain to the consumer.

Why not give product information as well as price information? Why not tax articles or label them in such a manner that essential facts about the merchandise statements are comparable to the ups and downs of price haggling?—*Dr. Kenneth Dameron, College of Commerce and Administration, Ohio State University, speaking before the Advertising Federation of America at its annual convention, June 20-23.*

We submit that advertisers can look for increased sales and even greater confidence in their institutions, and in their advertising through the new relationships developed between manufacturers and retailers by this right-wing Consumers Movement. We shall all do a better job, because:

1. The Consumers Movement will coordinate manufacturers' and retailers' sales planning:
   - —in checking and testing merchandise
   - —in dramatizing use and care of merchandise
   - —in advertising
   - —in sales signs
   - —in departmental displays
   - —in window displays
   - —use of salespeople

2. Both manufacturer and retailer will feel responsible for sponsoring or initiating movements for necessary standardization, informative labeling and completely honest advertising.

3. Both manufacturer and retailer will consider the matter of better public relations as a distinct part of his advertising program.

We repeat: "Why should advertisers be afraid of this Consumer Movement?" Here is the greatest selling opportunity in our history, dumped, literally, on each advertising desk in this country —the right wing Consumers Movement!

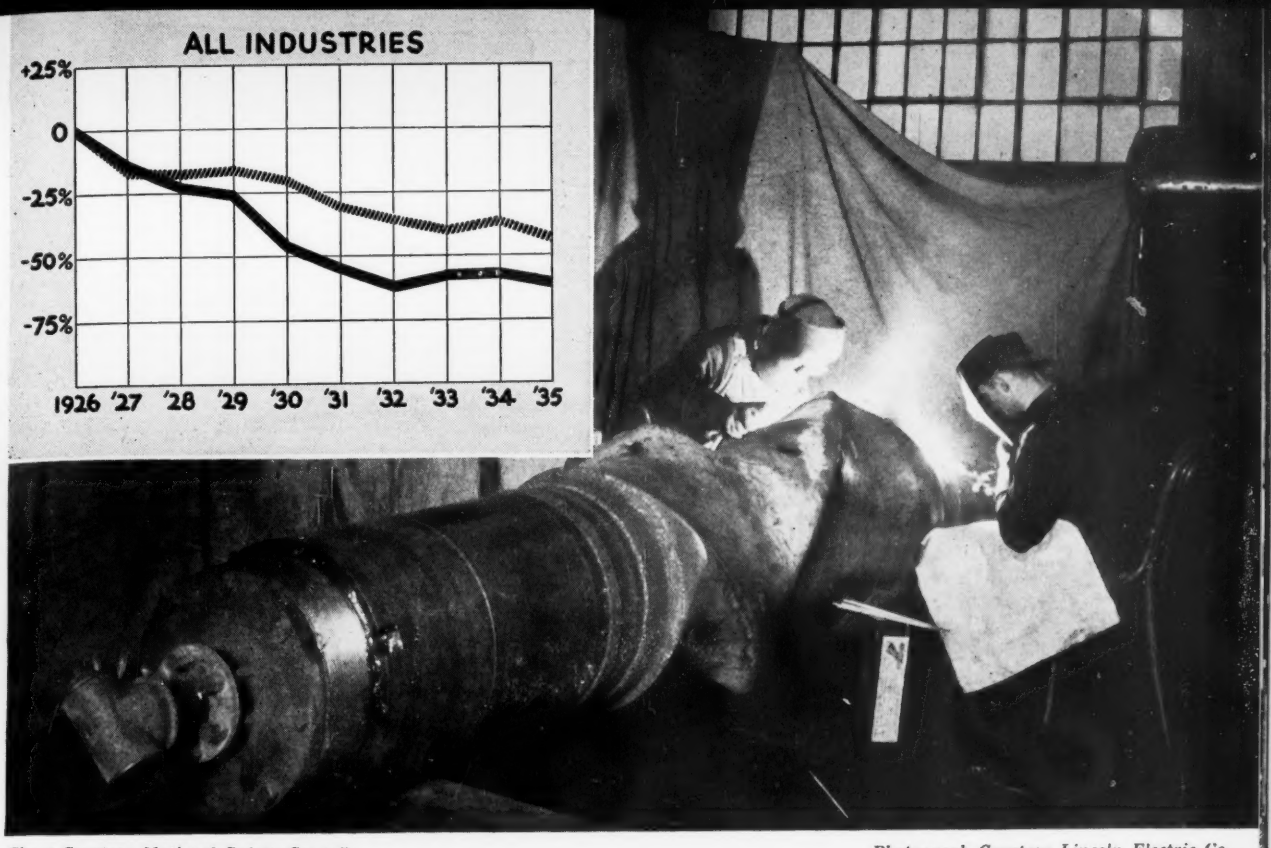

Chart Courtesy National Safety Council *Photograph Courtesy Lincoln Electric Co.*

Accident frequency (solid black line) and accident severity (broken line) have declined since 192

Industry has voice in safety regulations through ——

American Standard Safety Codes

Engineering to reduce accidents saves loss and injury to workers, saves money for industry

TWO considerations—humanitarian and economic—have given impetus during the past 20 years to a movement for reducing accidents to the lowest possible number.

Many of our larger industries have made organized accident-prevention work an integral part of plant operation. The National Safety Council, organized and supported by industry, has made extensive contributions to the advancement of industrial accident-prevention work through its technical and educational programs. The states have encouraged the creation of safer working conditions. The insurance companies have lent their influence through broad conservation programs as well as through work with their assured.

There has been a general effort to cope effectively with the accident problem. That the effort has been effective is shown by the reduction year after year in the number of industrial accidents reported. (See chart above.)

An important part of this concerted national effort is the movement initiated nearly twenty years ago to develop uniform safety codes.

The need for uniform safety codes on a national basis was emphasized by a number of developments—workmen's compensation laws; state laws

and municipal ordinances for the protection of workers; regulations and state labor departments and industrial commissions; and standards set up by insurance companies for determining the relative hazards in plants insured by them. These, however, all hark back to one original cause—new appreciation of the value of human life and limb—and are different manifestations of a keen desire to realize these values.

In 1919, therefore, at the suggestion of the National Safety Council, the National Bureau of Standards sponsored two conferences at Washington to consider the advisability of standardizing these efforts and the best method of doing it. There was complete agreement as to the need for uniform national safety codes. It was finally decided that these codes could best be prepared under a procedure such as that set up by the American Standards Association (then the American Engineering Standards Committee), in developing national standards. To include the safety code work in the program of the AESC, however, its scope and membership had to be enlarged.

The American Standards Association promptly took the necessary action. A safety group was added to its membership, and a national safety code committee was organized to act as an advisory committee. The membership of this committee, the Safety Code Correlating Committee, is widely representative of all concerned in safety matters.

Work on safety codes is under the advisory direction of the SCCC. Its functions include

(*a*). Investigating the need for particular codes;
(*b*). Defining and limiting the scope of codes;
(*c*). Considering the interrelation of codes;
(*d*). Passing upon the personnel of technical committees;
(*e*). Following up the work on codes; and
(*f*). Acting as a general clearing house on safety codes.

It is just as necessary if a code is to become of real practical value that its provisions represent a consensus of those interested as that the need for it be generally appreciated. A sectional committee for a safety code, therefore, is approved by the American Standards Association on recommendation of the Safety Code Correlating Committee only when it includes a balanced representation of those concerned. This representation covers manufacturers, employers, employes, governmental bodies, qualified specialists, and insurance representatives.

When a code has been formulated, it is recommended by the sponsor for approval by the ASA. In order to secure adequate advice, the question

Safety Code Correlating Group Brings Together Many Interests

Experts representing many organizations interested in safety are members of the Safety Code Correlating Committee, in charge of the safety program of the American Standards Association:

L. F. Adams*, National Electrical Manufacturers Association, *Chairman

Holger Jenson*, National Bureau of Casualty and Surety Underwriters, *Vice-Chairman

Cyril Ainsworth*, American Standards Association, *Secretary

American Gas Association, *James B. Douglas, R. B. Inman, (alt.)*
American Iron and Steel Institute, *Harry A. Schultz*
American Petroleum Institute, *H. N. Blakeslee, D. V Stroop (alt.)*
American Society of Mechanical Engineers, *H. H. Judson, Dan L Royer (alt.)*
American Society of Safety Engineers, Engineering Section, National Safety Council, *A. S. Regula, G. E. Sanford (alt.)*
Association of American Railroads, *C. E. Hill*
Automobile Manufacturers Association, *David C. Fenner, William J Cronin (alt.)*
Electric Light and Power Group, *C. R Beardsley, A. B. Campbell (alt.)*
International Association of Governmental Labor Officials, *John H. Hall, Jr., T. P. Kearns, J. P. Meade (alt.)*
International Association of Industrial Accident Boards and Commissions, *W. J. Brennan, S. W. Homan (alt.), Sharpe Jones, O. B. Chapman (alt.), George P. Keogh, W. H. Nichels, Jr. (alt.), Raymond C. Nicaise, William M. Knerr (alt.), John Roach, T. A. Wilson (alt.)*
National Association of Mutual Casualty Companies, *C. E. Pettibone, David S. Beyer (alt.)*
National Bureau of Casualty and Surety Underwriters, *Holger Jensen*
National Electrical Manufacturers Association, *L. F. Adams, Frank Thornton, Jr. (alt.)*
National Fire Protection Association, *H. L. Miner, C. W. Rulon (alt.)*
National Industrial Conference Board
National Safety Council, *W. Dean Keefer, W. S. Paine (alt.)*
Telephone Group, *A. B. Brown, W. P. Elstun (alt.)*
U. S. Department of Commerce, National Bureau of Standards, *M. G. Lloyd, John A. Dickinson (alt.)*
U. S. Department of Labor, *William Green*
U. S. Department of Labor, Bureau of Labor Statistics, *Swen Kjaer, William H. Klinehanse (alt.)*
U. S. Department of Labor, Division of Labor Standards, *V. A. Zimmer, R. P. Blake (alt.)*
U. S Public Health Service, *R. R. Sayers, P. A. Neal (alt.)*

of approval is referred to the SCCC for recommendation on whether the procedure has been followed, and whether the vote of the technical committee shows a sufficient consensus of opinion. Upon favorable report, the code is then approved by the ASA and, as an American Standard, it is brought to the attention of government officials, insurance companies, and industries concerned. The technical committee is continued to provide for revisions, and to interpret the provisions.

Adoption Shows True Worth

The best evidence of the recognition of the true worth of American Standard Safety Codes is the record of actual adoption of these codes by the regulatory bodies (usually the Department of Labor and Industry or the Industrial Commission) of the various states. A recent survey shows that they are fast becoming the basis of regulations of the state governmental agencies.

The Division of Labor Standards of the U. S. Department of Labor is actively promoting the use of American Standard Safety Codes by state regulatory bodies. The extensive participation by industry through its national trade associations has resulted in the direct use by industry of the codes as its own recommendations. Now insurance groups are using safety codes as the basis of their recommendations to their assured.

The following review of American Standard safety codes shows that ASA procedure has also been used in another field—safety on the highways. Four fundamental standards on highway safety have been approved by the ASA.

Public Utility Reduces Accident Frequency 87.6%

The prevention of accidents has always been of prime importance in our company, not only because of its humane value to the employees but because of its importance to our continuity of service as a public utility. The effectiveness of our program is reflected in a reduction of 87.6 per cent in our Frequency of Lost Time Accidents and in the cost per $100 of payroll from 96 cents to 26 cents during the last ten years.

We have used throughout our whole program, wherever possible, the American Standard safety codes and these have contributed in no small measure to the remarkable progress that has been made in our Accident Prevention Program.—*John Stilwell, vice-president, Consolidated Edison Company of New York.*

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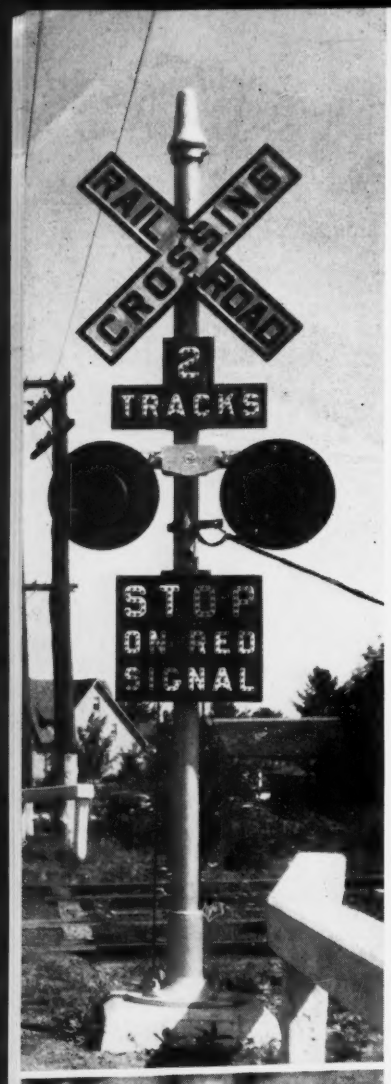
Approved American Standard Safety Codes



American Standard signs insure safer motoring (top). Below, example of extensive testing done as part of ASA work on code for safety glass.

Courtesy Assn. of American Railroads, Electrical Testing Laboratories

A2-1934 Specifications for Fire Tests of Building Construction and Materials (ASTM C19-33) *Am. Std.* 25c

These specifications cover the performance of walls, columns, floors, and other building parts under fire-exposure conditions. Practically any building material may be rated as ½ hour, 1 hour, 2 hours, 6 hours, 8 hours, etc., by the careful and exact application of the controlled fire test described.

The code provides for the selection of test samples, the application of fire endurance, the nature and force of the hose stream, and the type of nozzle. Exact conditions of acceptance are enumerated for each different type of material.

A9-1937 Building Exits Code *Am. Tent. Std.* 75c

This code specifies the number, size, and position of exit facilities sufficient to empty buildings promptly in case of fire or other emergency, and considers those features of construction and protection which have a bearing on safety of egress. The code applies to new and to existing construction.

Detailed requirements are given for stairs, stairways, fire escapes, ramps, doors, aisles, and corridors, horizontal exits (bridges to other buildings), elevators, escalators, and slide fire escapes.

The section of the code covering requirements for occupancy egress classifies occupancy as of low, moderate, and high hazard, with an illustrative list of specific examples for each group. The number of persons per unit of exit width is given for the various types of hazards, and in relation to the sprinkler installation. Schools, department stores, factories, hospitals, hotels and places of public assembly are treated separately and in full detail. For example, a formula is given for computing the necessary exits from an auditorium.

A10-1934 Manual of Accident Prevention in Construction *Am. Std.* (*Under Revision*) $2.00

The *Manual of Accident Prevention in Construction* was prepared under the supervision of the Accident Prevention Committee of the Associated General Contractors of America. The preface, foreword, and introduction include discussions on the need for accident-prevention practices in the construction industry, compiling accident records, effect of safety on morale, insurance, and rates, and savings due to accident prevention measures.

About 50 pages are devoted to a scheme of organization in which are suggested numerous details of a safety program.

The main part of the *Manual* covers safe practices on construction work with sections on 43 different phases of this problem.

A11-1930 Code of Lighting Factories, Mills and Other Work Places *Am. Std.* 20c

This standard was prepared as a guide for factory owners and operators in their efforts to improve lighting conditions in their factories. It was developed under the supervision of the Illuminating Engineering Society.

Part I of the standard covers the advantages of good illumination, including reduction of accidents and economy of operation.

Part II gives suggestions and general information on adequate lighting including sections on measurement of illumination; recommended levels of illumination; maintaining the levels of illumination; avoidance of glare; rating light sources from the glare standpoint; factors affecting glare; and specifications for adequate wiring.

Part III covers suggested minimum regulations to be established by state authorities, and includes rules on illumination required; avoidance of glare; exit and emergency lighting; and notes on the rules.

A12-1932 Safety Code for Floor and Wall Openings, Railings and Toe Boards *Am. Std.* 20c

Definite requirements for guarding floor openings, such as stairways, ladderways, hatchways and chutes, skylights, pits and trap-doors, manholes, temporary floor openings; and also rules for guarding wall openings and holes, such as yard-arm doorways; doorways without yard-arms; chutes, windows, and wall holes are provided in this standard. Temporary wall openings are also covered.

Specifications are given for a standard railing; a stair railing; strength of standard railings and stair railings of different types of construction, such as wood, pipe, and structural metal; and anchored posts and framing members for railings of all types. Toe boards; floor opening covers and their supports; skylight screens; and wall opening barriers, grab handles, and screens are also covered by the standard specifications.

Codes Crystallize Industry's Experience

The development of these safety codes under the procedure of the American Standards Association is evidence of a phase of industrial self-regulation that has met with unusual success. The appeal of American Standard Safety Codes to industry is particularly strong because industrial representatives have a direct part in their formation. Industries, like people, are more willing to abide by regulations they set up for themselves than they are to follow rules laid down by some external agency.

Because the provisions in these codes represent a crystallization of accumulated industrial experience and are the result of painful trial and error in many cases, they constitute a symposium of the best methods of meeting the technical problems of safety. Therefore, they become the guides for industry itself and are voluntarily adopted and followed. In their development, industry has taken the leadership.

A13-1928 Scheme for the Identification of Piping Systems *Am. Rec. Practice* 50c

This standard was developed for the purpose of providing industrial plants and organizations of various kinds with a uniform system of colors for the identification of piping systems, so that the designations showing which pipes contain materials safe to handle, and which contain unsafe materials, may be the same in all cases.

The main part of the code defines piping systems, fire-protection, materials and equipment, dangerous and safe materials, protective materials, and extra valuable materials. It also provides a method of identification of piping; a classification by color; and detailed instructions for working out a standard identification scheme.

Appendix A includes a classification of materials carried in pipes; Appendix B, identification by colors; Appendix C, description of colors for special application; and Appendix D, identification of piping systems by legends.

A14-1935 Safety Code for Construction, Care and Use of Ladders *Am. Std.* 25c

This code defines the following types of ladders: fixed, portable, single, extension, fire, step, trolley, side-rolling, sectional, trestle, extension, mine shaft, and mine ladderway.

One section discusses materials, including timber defects, wood side rails, knots, pitch pockets, etc., and includes a classification of woods for use in ladders and specifications for wood steps and metal parts.

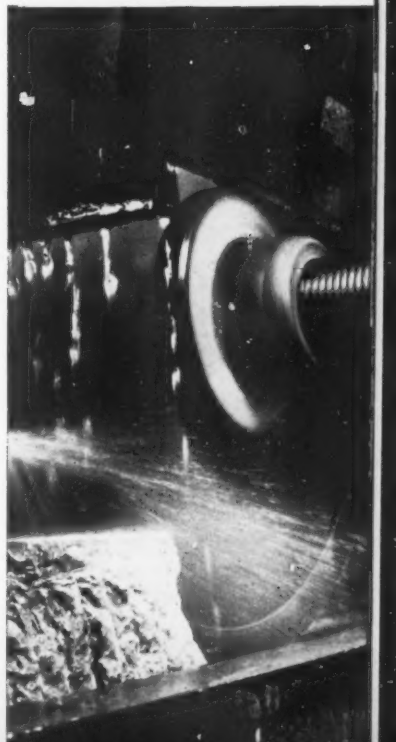
Specifications for side rails and steps are given.

Rules for the construction of the various types of ladders are included, as well as requirements for the installation of fixed ladders, covering such problems as clearances, fastenings, pitch, and maintenance.

Accessories, including cages, rest platforms, landing extensions, landing platforms, non-slip bases, and hooks are covered, and the proper care and use of ladders is described.

A17.1 Safety Code for Elevators, Dumbwaiters and Escalators *(Standards Council now voting on approval as American Standard.)* $1.00

The seven parts of this code include requirements for hoistway construction for passenger and freight elevators and for dumbwaiters; power passenger elevators; power freight elevators; hand elevators; escalators; dumbwaiters; and rules for inspection, maintenance and operation. Each part is divided into sections which provide detailed requirements for the various elevator parts, equipment, and safety devices.



Safety on the highway, in construction work, and guards for dangerous machinery (such as abrasive wheels) are important phases of the ASA safety program.

Photos Courtesy Brown Bros., Times-Wide World, and Norton Co.

Safety codes for machine tools, and for exhaust systems, are now being prepared. Headlight requirements are specified in the Code for Colors for Traffic Signals (below).

Photos Courtesy Norton Co., RCA Mfg. Co., Brown Bros.

A17.2-1937 Recommended Practice for the Inspection of Elevators *Am. Rec. Practice* 75c

This handbook is intended to serve as a guide for the general use of elevator inspectors in the practical application of the American Standard Safety Code for Elevators, Dumbwaiters and Escalators.

A23-1932 Standards for School Lighting *Am. Std. (Under Revision)* *Out of Print*

The primary purpose of this code is to establish criteria of good illumination for the guidance of architects, engineers, school officials, and others interested in the conservation of children's vision and the well-being and efficiency of pupils and teachers.

Recommended values of illumination are given for different types of school rooms. Distribution and diffusion of light, glare, color of ceiling and walls, and maintenance of proper and adequate equipment for both natural and artificial lighting are discussed.

The final section of the standard suggests regulations on minimum illumination values, diffusion and distribution of light, avoidance of glare, and emergency lighting requirements for auditoriums.

A39-1933 Safety Code for Window Cleaning *Am. Rec. Practice* 20c

The provisions of this standard specify when approved safety devices shall be used in window cleaning and when alterations shall not be allowed. Specifications to be followed for swinging scaffolds, boatswain's chairs, portable and sectional ladders used in connection with window cleaning operations are included.

Materials for belts, belt terminals, and anchors are specified in connection with rules for their design. Rules are also given for the height of belt fastenings, methods of fastening anchors, and the installation of special anchors for extra-width windows, Anchor fittings are specified for casement windows which cannot be wholly cleaned while standing at the inside.

B7-1935 Safety Code for the Use, Care, and Protection of Abrasive Wheels *Am. Std.* 10c

Rules and specifications to insure safety in the use of abrasive wheels operating at peripheral speeds exceeding 2,000 feet per minute are given in this code. Definitions for abrasive wheels, cutting wheels, types of hoods, flanges, adaptors, sleeves, protection bands and chucks, and precision grinding are included. Rules cover provision for storage, inspection, mounting and operation of wheels, and include diagrams and specific requirements for the various types of hoods.

The code includes tables showing the size of spindles for wheels of various diameters and thicknesses operating at speeds up to 7,000 peripheral feet per minute; materials suitable for use for grinding wheels; minimum sizes and spacing of rivets, bolts and

Maryland's Safety Requirements Use 32 American Standard Codes

Thirty-two safety codes approved by the American Standards Association have been adopted verbatim by the Maryland State Industrial Accident Commission and issued as general orders of minimum specific requirements, with the force and effect of law. The reasons for this are:

First, it would have been a slow, tedious, expensive undertaking for the Maryland Commission to compile the codes itself, and many public hearings would probably have been necessary.

Second, and more important, there are many advantages in having codes *national in scope.*

Third, the provisions of the codes represent the experience of industry and constitute a consensus of opinion of the best methods of meeting the technical problems of safety.

Safety codes in the past have been an important cog in the reduction of accidental injuries in industry, but I believe American Standard safety codes, national in scope, are destined to take an even greater part in further reducing this needless waste and suffering due to industrial accidents. —*Joseph A. Haller, Director of Safety, Maryland State Industrial Accident Commission.*

Should Use National Standards, Says California Safety Chief

For a number of years the Industrial Accident Commission of California has based its safety requirements on national standards, using American Standard safety codes whenever they have been available.

A state should adopt codes based on national standards wherever possible. In California, for instance, we have many large corporations operating in a number of states. If each state adopts regulatory measures different from those adopted by other states, these corporations find it impossible to set up a company standard which can be used in all.—*C. H. Fry, Chief, Bureau of Industrial Accident Prevention, California State Industrial Accident Commission.*

studs; and minimum diameters for pipes for the exhaust of dust when dry grinding operations are carried on. Regulations for flanges cover details of material and dimensions, and those for holes include tables for boring.

Three tables show the relation of types of wheels to permissible maximum speeds, varying up to 16,000 surface feet per minute for wheels 16 inches in diameter and smaller. The relation between revolutions per minute and peripheral speed with reference to diameter of wheel is shown.

B8-1932 Safety Code for the Protection of Industrial Workers in Foundries *Am. Std.* 20c

The first section covers requirements for plant layout, including protection of entrances, floors, pits, galleries, gangways, and aisles. A section on machines deals with the safe operation of cupolas; open hearth furnaces; charging machines, buggies, cars, or boxes; and electric melting furnaces.

Requirements for safety devices are specified for such equipment as lip-pouring ladles; crane, truck, and trolley ladles; single shank ladles; crown plate of furnace; sand buckets; sling beams; trunnions on flasks; slings; cranes; air and electric hoists; gears, pinions, etc.; molding machines; sand bins; scrap breakers; the use of explosives and drop balls; stacking of flasks, materials, and equipment; and pilot lights on ladle driers and heaters.

Rules for finishing and cleaning processes are given, and regulations for light, heat, and ventilation of work places are specified. Daily inspection and maintenance of equipment is provided for in the code. Definite requirements for the devices worn by workers for their protection are given. An appendix to the code discusses safety suggestions covering operating conditions in foundries.

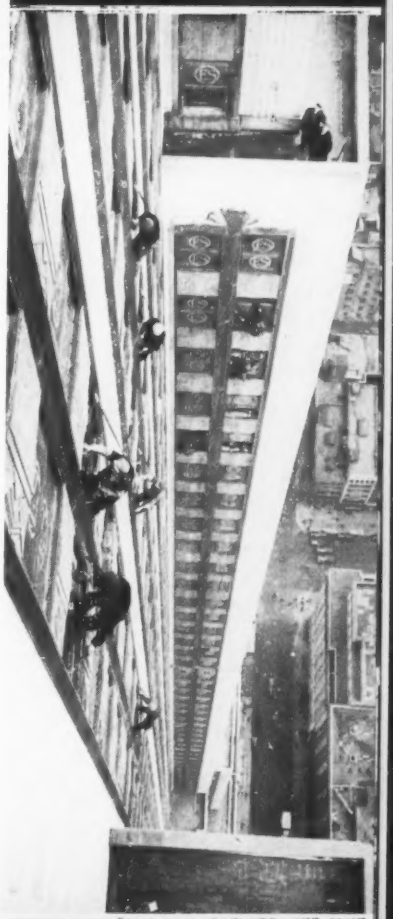
B9-1933 Safety Code for Mechanical Refrigeration *Am. Std. (Under Revision)* 30c

Safe installation, operation, and inspection of various types of refrigerating systems are covered. Refrigerating systems are classified according to the total weight of refrigerant contained in or required for their proper operation.

The largest section covers industrial and commercial systems including such subjects as their limitation, machinery room, commercial locations, air conditioning systems, design and construction, safety devices, pressure limiting devices, relief valves, discharge of refrigerant, etc. Two tables cover required size of relief valves and minimum test pressures for various refrigerants. The code also includes sections on unit systems and apartment dwelling systems.

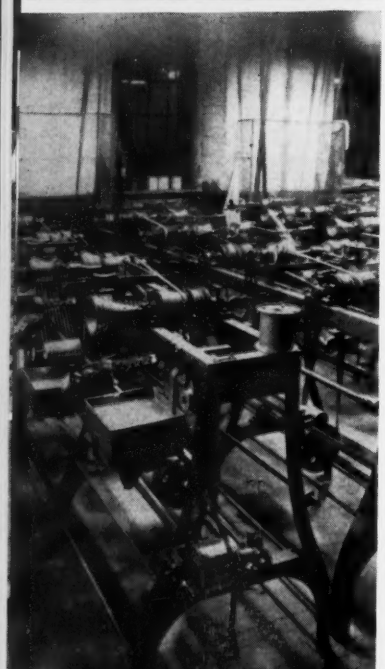
B11-1926 Safety Code for Power Presses and Foot and Hand Presses *Am. Std. (Under Revision)* *Out of Print*

These requirements apply to machines fitted with rams (plungers) and dies, such as power presses, foot presses, and hand presses used for the purpose of blanking, trimming, drawing, punching, or stamping material. The code also includes plate shears and plate punches.



Heads and eyes of workers are protected in many hazardous occupations (top). American Standard safety requirements for window cleaning help prevent accidents. Three codes provide protection against lightning (below).

Photos Courtesy Lincoln Electric Co., Empire State Bldg., General Electric Co.



A badly lighted shop (top) and two examples of good lighting, important in safety, are shown here.

Photos Courtesy General Electric Co., and Illuminating Engineering Society

B13-1924 Logging and Sawmill Safety Code *Am. Tent. Std.* 60c

These rules for logging operations cover the complete logging process, starting with felling the trees and covering the normal process of a log from the woods to a skid pile, loading, and shipment by rail or river to the sawmill. The terms used in logging and sawmill operations are defined, and special rules cover storage and use of explosives and inflammable liquids.

Mill design and layout; handling logs in the mill; guarding and operating machinery; waste disposal; power and power transmission, are covered. Yard operation rules cover dry kiln layout and processes; arrangement of roads, railroads, walkways; piling of lumber, and the handling of yard lumber by machinery.

B15-1927 Safety Code for Mechanical Power-Transmission Apparatus *Am. Std.* 35c

Specifications for guarding flywheels, cranks, and connecting rods, tail rods or extension piston rods, and governor balls on prime movers such as steam, gas, oil, and air engines, motors, steam and hydraulic turbines are covered in the first part of this standard. Following are requirements for guarding, installing, and locating such equipment as shafting, pulleys, belts, ropes, chain drives, gears, sprockets, chains, friction drives, keys, set screws, collars and couplings, bearings, and facilities for oiling.

Equipment for guarding clutches, cut-off couplings, clutch pulleys, belt shifters, shippers, poles, perches, and fasteners is specified. These types of guards are shown in two pages of sketches. Materials, design, and method of manufacture are given for a number of various types of guards. The last three sections of the standard cover operating rules, a discussion on various types of equipment, and references to safety codes dealing with subjects related in some way to this code.

B24-1927 Safety Code for Forging and Hot Metal Stamping *Am. Tent. Std.* 15c

This code covers safety requirements for all classes of power-forging machinery for both drop forging and flat-pile forging. It includes steam, pneumatic, and mechanically operated hammers, hydraulic presses, trimming presses, bulldozers, upsetting machines, and bolt-heading and rivet-making machines, and hot saws. It also gives requirements for incidental operations in connection with such machinery. Illustrated descriptions show how various manufacturers have met certain code requirements. A number of operating rules for use in plants are included.

B28a-1927 Safety Code for Rubber Mills and Calenders *Am. Rec. Practice* 5c

Safeguarding of mills and calenders at the point of operation including safety-trip controls and quick-stop facilities, determination of distance of travel, stopping limits for individually driven mills, mills driven in groups, and individually and group-driven calenders is covered by this code. Various requirements are illustrated. Operating rules, together with a discussion of accident prevention in connection with these operations are given.

C1-1935 Regulations for Electric Wiring and Apparatus in Relation to Fire Hazard (National Electrical Code) *Am. Std. (Under Revision)* 5c

Detailed requirements for the installation of electrical wiring and equipment for lighting, heating, and power are covered chiefly from the point of view of the fire hazard presented by such installations. Signalling systems are also covered in so far as they may involve such hazards. The code covers certain features of the casualty hazard in numerous instances, but from this standpoint, it should be considered in connection with the National Electrical Safety Code.

C2-1927 National Electrical Safety Code Part I—10c; Part II—60c; Part III—15c; Part IV—15c; Part V—10c; Handbook 16—Wood Poles for Overhead Electrical Lines—10c. *Am. Std. (Under Revision)*

The purpose of this code is to provide rules and regulations which will insure the safe operation of electrical lines and equipment. The terms used are defined and rules covering methods of protective grounding are given special treatment.

The five parts of the code are: Part I, Rules for the Installation and Maintenance of Electrical Supply Stations; Part II, Rules for the Installation and Maintenance of Overhead and Underground Electrical Supply and Communication lines (seven appendices to this section give extensive data on conductors and supporting structures); Part III, Rules for the Installation and Maintenance of Electrical Utilization Equipment; Part IV, Rules for the Operation of Electrical Equipment and Lines; and Part V, Rules for Radio Installations.

This code should be considered in connection with the National Electrical Code.

Oklahoma Labor Department Finds Codes "Big Help"

The Oklahoma Department of Labor has for many years used the codes approved by the American Standards Association in our safety work. The 1936 edition of Bulletin No. 7-A, our Bureau of Factory Inspection Bulletin, carries the following American Standard codes:

Mechanical Power Transmission Code
Code for Floor and Wall Openings, Railings, and Toe Boards
Code for Lighting Factories, Mills, and Other Work Places
Code for the Use, Care, and Protection of Abrasive Wheels
Safety Code for Laundry Machinery and Operation
Safety Code for Power Presses, Foot, and Hand Presses

In addition to these we use the American Standard Safety Code for freight and passenger elevators.

The use of these codes has been a big help to our Department.
—W. A. Pat Murphy, Commissioner of Labor, State of Oklahoma.

C5.1-1933, C5.2-1933, C5.3-1929 Codes for Protection against Lightning *Am. Std.* 15c

These codes cover protection of persons, buildings, and miscellaneous property, and structures containing inflammable liquids and gases. The first two sections were revised in 1933.

A number of rules for personal conduct as a protection against lightning are given. In the section on lightning protection for ordinary buildings, requirements are included for conductors, points, and elevation rods, prevention of deterioration, air terminals and conductors, metal-roofed and metal-clad buildings, number of down conductors, interconnection of metallic masses, ground connections and radio installations and wires entering buildings. Requirements of this type are also given for miscellaneous structures, buildings containing baled flammable materials, buildings of nonconducting materials, smokestacks and chimneys, metal smokestacks, various types of stacks, hangars for balloons and airships, ships, trees, and livestock in fields. Protective measures and precautions are designated for structures containing inflammable liquids and gases.

Appendix A contains a discussion of lightning, its origin, characteristics, and effects. Appendix B gives a bibliography on the subject.

D3-1927 Colors for Traffic Signals *Am. Std.* 25c

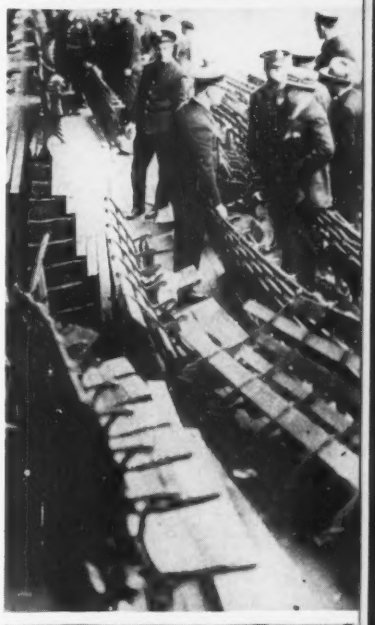
This code provides a standard of colors for vehicle lights and signals and includes specifications for headlights, tail lights, warning signal lights, and marker lights. The general significance of colors, form, and flashing signals in connection with highway traffic is specified.

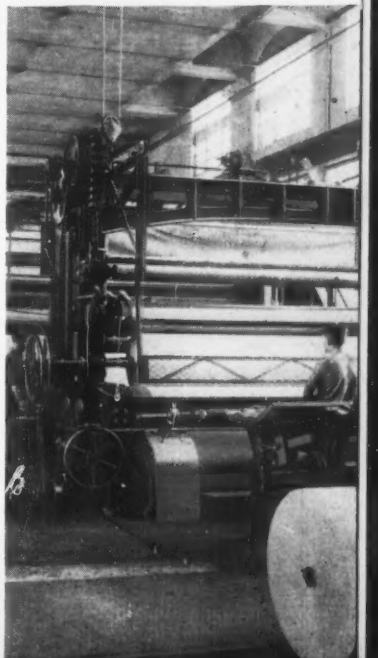
Requirements for signals at railroad grade crossings are given. Rules for qualitative definition of red, yellow, and green colors for luminous signals are provided, as well as the dominant wave-length, purity, and integral transmission of glass.

D6-1935 Manual on Uniform Traffic Control Devices for Streets and Highways *Am. Std.* 50c

This standard was prepared by a Joint Committee on Uniform Traffic Control Devices appointed by the American Association of State Highway Officials and the National Conference on Street and Highway Safety. It was later submitted to and approved by the American Standards Association.

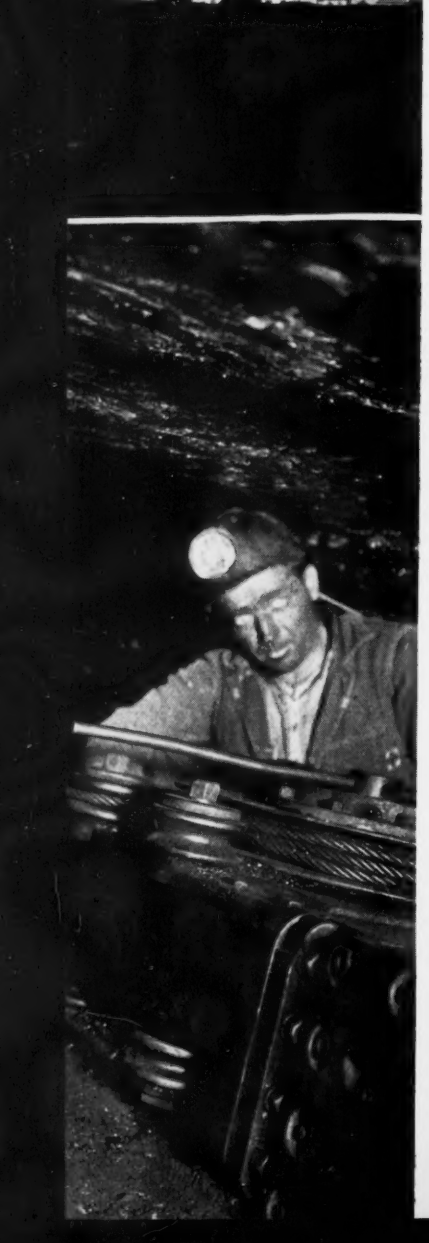
The four main sections of this standard cover signs, markings (regulatory, guidance, and warning), signals (traffic control and flashing), and islands (safety zones and traffic islands). Regulations are given covering legal authority; correct and consistent application; shape, color, materials, dimensions, message, etc. of the design; location and installation, and maintenance. There are 18 pages of illustrations of the requirements and five appendices giving special information.





High speeds in cutting stone are permitted with American Standard guards (above). Safety requirements for portable grandstands are now being prepared. All paper-making processes are covered by the American Tentative Standard (below).

Photos Courtesy Norton Co., Acme News Photo, International Paper Co.



The Manual of Accident Prevention in Construction is widely used. Safety rules tell how to install and use electrical equipment in coal mines.

Courtesy Times-Wide World, Sullivan Machinery Co.

D8-1937 Standard for Railroad Highway Grade Crossing Protection *Am. Std.* 10c

Uniform practice in protecting highway grade crossings is the goal of this code, developed by the Joint Committee on Grade Crossing Protection, Association of American Railroads. Drawings show exact arrangement, dimensions, and other details for each type of sign or device covered. The length of time that bells, lights, etc., must operate when a train is approaching is specified.

K2-1927 Gas Safety Code for Installations and Work in Buildings *Am. Std.* 20c

This code is divided into two parts: first, mandatory rules which must be followed to attain the greatest measure of safety; second, notes on the rules, describing in simple language the dangers to be guarded against.

K13-1930 Code for Identification of Gas-Mask Canisters *Am. Rec. Practice* 5c

Colors to identify gas-mask canisters (containing the filtering or absorbing materials for protection against harmful gases, vapors, smokes, and mists) are assigned in this code for each type of harmful gas.

The purpose of the code is to identify the gas-mask canisters so clearly that no misunderstandings can arise in selecting the proper canister for the danger to be encountered.

L1-1929 Textile Safety Code *Am. Std.* 5c

These requirements apply to all plants operating textile machinery and cover equipment, such as pickers, cards, combing machinery, drawing frames, slubbers, roving frames, ring spinning frames, spinning mules, sewing machines, washing machines, mangles, jigs and vats, color mixers, calenders, extractors, and other machinery and equipment used for similar purposes.

M2-1926 Safety Rules for Installing and Using Electrical Equipment in Coal Mines *Am. Std.* 5c

The installation and use of electrical equipment underground in coal mines is covered in this code. From one point of view the code is supplementary to the National Electrical Code and the National Electrical Safety Code, which cover aboveground installations.

General definitions, rules, and requirements are treated in the code, together with specific information on voltages, capacity and rating of conductors, and rules for the prevention of accidents and fires.

Divisions of the code cover stationary electrical equipment, buildings, enclosures, portable electrical equipment, and circuits and conductors.

M10-1928 Miscellaneous Outside Coal Handling Equipment *Am. Tent. Std.* *Out of Print*

This code provides a system for hoisting and lowering signals. Specific requirements for devices used in hauling men on inclines, for hoisting and lowering men in shafts, and special rules to increase safety around the tipple are included.

Fire protection is covered by a section of the standard and attention is called to the American Standard Screw Threads for Fire Hose Couplings for use on all fire-fighting equipment.

A special table shows sizes of pulley end shafts of stationary induction motors recommended for horsepower equipment from 5 to 200 classified by revolutions per minute from 600 to 1800.

M12-1928 Standard for Construction and Maintenance of Ladders and Stairs for Mines *Am. Tent. Std.* 25c

Requirements for the location and construction of platforms, installation of lights, power wires, and other safety equipment for mine ladderways are provided. Specifications for mine ladders and mine stairs are given, including dimensions of stairs, risers and treads; and handrails for stairs. Specifications are also given for mine shaft ladders, cages, landing extensions, and breaks.

M13-1925 Recommended Practice for Rock Dusting Coal Mines to prevent Coal Dust Explosions *Am. Rec. Practice* 25c

This code lists the types of mines which should be rock dusted and provides regulations covering the kind, size, and amount of dust to be used. Methods for sampling the dust and keeping records of the sampling are discussed and definite rules specifying the parts of a mine which should be dusted are given.

M14-1930 Recommended Practice for the Use of Explosives in Bituminous Coal Mines *Am. Rec. Practice* 25c

This code discusses suitability of types of explosives and appliances for use in bituminous coal mines; handling and storing explosives on the surface; transportation, handling, and storage underground; and methods and precautions for charging and firing, including inspection.

The use of particular explosives, such as dynamite, is required to be approved by the U. S. Bureau of Mines.

M15-1931 Recommended Practice for Coal Mine Transportation *Am. Rec. Practice* 20c

The first part of the code covers rules for the installation of tracks, bonding of tracks, the use of stopblocks and derails on grades in room entries, switches, derailers on slopes, clearances of working places, signals, doors, slope hoists, shaft hoist and cars.

The second part of the code is devoted to operation and covers blocks and derailers, switching in room necks, make-up trips, endless ropes or chains, signal system, duties of footman or rope rider, system of signals for hoisting and lowering, locomotives, locomotive signals, trip riders, cars and hoists. Special provisions cover hauling explosives.

Rules for the inspection of equipment are included.

M17-1930 Recommended Practice for Fire Fighting Equipment in Metal Mines (mimeographed) *Am. Rec. Practice* *No Charge*

Specifications for fire-fighting equipment, such as surface and underground water supply and hose equipment, fire extinguishers and fire pails, spraying or sprinkling systems, and oxygen breathing apparatus are included in the first part of the code. Fire preventive measures covering ventilation and ventilation equipment, explosives, and electrical equipment are given. Fire signals are provided for, together with requirements for fire-fighting personnel and miscellaneous preventive measures which should be taken.

O1-1930 Safety Code for Woodworking Plants *Am. Std.* 10c

Requirements for the safe operation and maintenance of woodworking machinery, including cooperage and making of veneer, are provided. The standard deals primarily with point of operation hazards on woodworking machinery and gives detailed requirements for guarding all types of saws, wood shapers, and similar equipment used in such operations. Rules for plant layout are included, as well as a section on operating rules, and a discussion of various practices which promote safe operation.

P1-1936 Safety Code for Paper and Pulp Mills *Am. Tent. Std.* 25c

Rules covering the handling and storage of pulp wood and other materials in the yard and from ships, the removal and conveying of such materials and protective measures to be employed by workers are outlined. The section on preparing pulp wood gives rules for guarding saws; slasher tables, drive belts, pulleys and shafts; the runway to the jack ladder, etc. The code requires guards for hand barkers, barking drums, splitters and chippers.

Detailed requirements are included for rag and old paper preparation; chemical processes of making pulp; bleaching; mechanical pulp process; stock preparation; and machine and finishing room practices.

X2-1922 Safety Code for the Protection of the Heads and Eyes of Industrial Workers *Am. Std. (Under Revision) Out of Print*[1]

Requirements for guards to adequately protect the worker when the nature of the industrial process or operation presents a sufficiently serious hazard to the head, face, neck, or eyes of a worker are given. The code classifies various hazards and states that employers shall furnish protectors, and employees shall use them for specified operations.

[1]Copies of the code, Bureau of Standards Handbook 2, may be consulted at large public libraries.

Z4.1-1935 Safety Code for Industrial Sanitation in Manufacturing Establishments *Am. Std.* 20c

These requirements apply to all permanent places of employment in which articles are manufactured, repaired, cleaned, sorted, or renovated, in whole or in part for profit, sale, or compensation. The code prescribes minimum sanitary requirements for the protection of the health of all employees in such establishments.

Sections cover application of the rules and specifications for the following: Water supply, lighting, ventilation, housekeeping, expectorating, waste disposal, inspection, miscellaneous requirements, hazardous processes, personal service rooms, toilet facilities, washing facilities, dressing rooms for men, dressing rooms for women and lunch rooms.

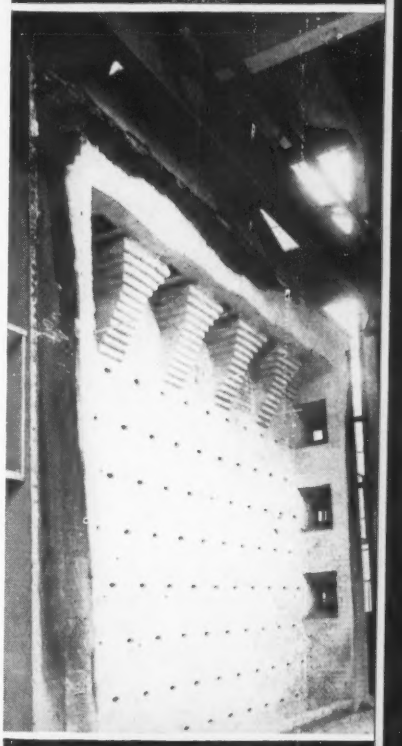
Z4.2-1935 Specifications for Drinking Fountains *Am. Std.* 10c

These specifications, based on the requirements contained in Bulletin 87 of the Women's Bureau, U. S. Department of Labor, cover: Material of fountain; material of nozzle; protection of nozzle; bubbler and bowl of fountain; drain from fountain; water supply pipe and valves; height of fountain; waste opening and pipe.

Z4.3-1935 Specifications for the Sanitary Privy *Am. Tent. Std.* 10c

These specifications were adopted verbatim from Supplement 108 of the U. S. Public Health Service which covers practical information relative to sanitary privies.

(Continued on back cover)



Standard inspection rules for motor vehicles are being considered by an ASA committee (top).

Fire tests on building materials are carried out by the National Bureau of Standards (center).

Fundamental requirements for installation of exhaust systems are now available (below).

Photos Courtesy Charles Phelps Cushing, National Bureau of Standards, William M. Rittase

American Standard Safety Codes

See page 199

(Continued from page 209)

Z8-1924 Safety Code for Laundry Machinery and Operations *Am. Tent. Std.* 5c

Rules for safety in the operation of all moving parts of equipment used in a laundry, as well as provisions for effective guarding of the point of operation of specific laundry machines are established by the code.

Z9 Report Relating to the Design and Operation of Exhaust Systems 40c

This report defines dusts, fumes, mists, vapors, and gases; gives rules for the construction of exhaust hoods; includes a table of minimum air velocities required to capture industrial dusts of several types; and shows the design and installation of exhaust piping. Special sections relate to exhaust fans and to air cleaning plants.

Fundamental concepts and data available at this time on the subject are assembled and the manner in which these influence the method of design is indicated. The report is intended as a guide to those desiring to install and use exhaust systems as well as to manufacturers and designers of this equipment.

Z12 Safety Codes for the Prevention of Dust Explosions *Am. Std.* 25c

These ten codes listed below contain rules for the prevention of dust explosions and provide proper control and prevention measures to reduce losses.

Detailed rules and regulations cover structures and processes, ventilation, electrical equipment and wiring, removal of dust, and plant equipment and operations.

Z12b-1931 Installation of Pulverizing Systems for Sugar and Cocoa

Z12f-1930 Prevention of Dust Explosions in Coal Pneumatic Cleaning Plants

Z12g-1931 Prevention of Dust Explosions in Wood-Flour Manufacturing Establishments

Z12h-1931 Prevention of Dust Ignitions in Spice Grinding Plants

Z12i-1931 Use of Inert Gas for Fire and Explosion Prevention

Z12.1-1935 Installation of Pulverized-Fuel Systems

Z12.2-1935 Prevention of Dust Explosions in Starch Factories

Z12.3-1935 Prevention of Dust Exposions in Flour and Feed Mills

Z12.4-1935 Prevention of Dust Explosions in Terminal Grain Elevators

Z12.5-1935 Prevention of Dust Explosions in Woodworking Plants

Z16.1-1937 Standard Method of Compiling Industrial Injury Rates *Am. Std.* 20c

This code sets up time charges for six classes of industrial injuries: death, permanent total disability, permanent partial disability, temporary total disability; temporary partial disability, and first aid case. A scale from which time charges may be determined, and rules for computing frequency and severity rates are given. A section on rulings and interpretations is included.

Z26.1-1935 Safety Code for Safety Glass for Glazing Motor Vehicles Operating on Land Highways *Am. Tent. Std.* 20c

The following specific tests for safety glass are given in this code: discoloration, humidity, boiling, ball (impact), shot bag (impact), fracture, dart, and visibility distortion. A provision for labeling glass which meets the requirements of the standard is included.

Z33-1935 Standard Regulations for the Installation of Blower and Exhaust Systems *Am. Std. (Under Revision)* 10c

The regulations cover systems for heating and ventilating, removal of flammable vapors, and conveying dust, stock, and refuse. Sketches are given of vertical duct shutters and automatic hinged duct shutters for openings in fire walls, automatic dampers for duct openings not over 12 inches in diameter, automatic shutters at outlet openings and automatic dampers at outlet opening or at opening to branch ducts, as well as a form of safety relief vent.

Standards Under Development

(No publications on these subjects are for sale.)

A22 Safety Code for Walkway Surfaces

B14 Safety Code for Machine Tools

B19 Safety Code for Compressed Air Machinery and Equipment

B20 Safety Code for Conveyors and Conveying Machinery

B30 Safety Code for Cranes, Derricks and Hoists

D7 Standards for the Inspection of Motor Vehicles

Z5 Ventilation Code

Z9 Safety Code for Exhaust Systems

Z13 Safety Code for Amusement Parks

Z16 Standardization of Methods of Recording and Compiling Accident Statistics (Proposed American Recommended Practice Method of Compiling Industrial Accident Causes)

Z20 Safety Code for Grandstands

Z28 Safety Code for Work in Compressed Air

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